Business Budgeting and Control

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Business Budgeting and Control

HECKERT • WILLSON

This is the Second Edition of a book that has established itself as a standard working guide to budgeting techniques for business executives and accounting officials. It covers everything from principles through methods and procedures for the preparation and operation of budgets for all types of business. Stress is laid on the methods of approach that are fundamentally the same in all kinds of business, large or small. The book shows how budgeting principles can be applied to bring the management of finances under the control of a well-ordered plan. It explains how a budget may be used to stimulate and coordinate business effort, and how it can increase earnings, control expenses, and effect savings in the various branches of a business. Step by step it follows each budget through from the time the budget figures are constructed to the time when they are compared with actual results and budget reports are drawn up. The over-all management viewpoint is emphasized throughout, and full consideration is given to the flexibility necessary for efficient budgeting.

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PREFACE

By its very nature, American business is dynamic and ever-changing. Budgeting, as applied to business, must also be adapted to new conditions if it is to continue to be the powerful management tool that it is capable of being. In this Second Edition we have attempted to provide an up-to-date presentation of the latest methods of regulating future income and expense and controlling business properties.

The book has been written for students in the fields of accounting and management, for business executives on whom falls the ultimate responsibility for planning and control, and for accounting officers who largely direct the budgetary control methods. While budget procedure has been fairly well developed in most of the very large concerns of this country, there are thousands of small and medium-sized companies in which adequate budget and control procedure is lacking. There is, however, rising up in these concerns a new generation of executives and accountants whose training and experience are being directed to scientific methods of business planning and control. It is to this group, and to students who will later join this group, that the suggestions in this book are particularly directed.

We have constantly tried to emphasize the over-all management viewpoint in our approach to effective budgeting. Part I of the book is devoted to a survey of the purpose of budgeting both for the manager and for the accountant. In Part II we begin with a general consideration of the budgeting procedure as a whole, showing how each part makes its contribution to the final result. Each step is then considered separately, with numerous examples from a wide variety of businesses. While the specific problems of budgeting and control vary somewhat in concerns of different types, the basic purposes, objectives, and methods of approach to the problems are fundamentally the same in all kinds of business. It is these that have been especially stressed.

Part III covers profit planning and the control applications of budget data, with a full discussion of the break-even chart as a tool of analysis. Since it is only through people that costs can be reduced and intelligent plans developed, a chapter is devoted to the human side of budgeting. Finally, there is a discussion of the methods of reporting the results of the budget program to executives at different levels and with different interests.

The material presented in this book is based on the authors' combined experience in controllership and management responsibility, in consultations on budgeting problems with businesses of many types, and in university teaching. Together, we have aimed at a presentation which will be of the widest possible interest and value to executives, accountants, and college students.

The authors wish to express their thanks to their many professional associates and friends who have offered suggestions in connection with the preparation of this Second Edition. In particular, they wish to thank Mr. Floyd R. Findley, of International Business Machines Corporation, for his assistance in securing illustrative material for tabulating machine applications.

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January, 1955

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PART I

GENERAL ASPECTS OF BUSINESS BUDGETING AND CONTROL

Chapter 1

BUSINESS PLANNING AND CONTROL—A MANAGERIAL VIEWPOINT

The Business Objective. It has often been said that under our American "free enterprise" system the chief objective or goal of a business is the earning of a profit. Such a statement is only partially true. In a broader sense, a business organization is an economic institution. It is created principally for the purpose of providing the public with those goods or services which are needed or desired. This objective is fundamental. In the eyes of the customers, and from an economic viewpoint, there is no other reason for the existence of the business except this service it renders. If this service objective is not attained, then the organization ultimately will wither away and die.

To be sure, there usually exist other collateral objectives which have social implications. For example, the employers may seek to provide the employees with the best possible working conditions or job security consistent with the well-being of the business. Or management may seek for itself the highest possible remuneration. And the employees may attempt to secure the highest possible wages. Yet any such goals are still dependent upon and successfully supported only by meeting the chief objective—the satisfaction of customer needs or desires.

The Management Task. The prosperous business enterprise of today does not usually, or for long, achieve its objective by mere chance. A necessary ingredient is management, another term for executive leadership. The managerial task is to perform the requisite planning, organizing, and controlling of the activities of the subordinate groups of the enterprise to the end that the business objective is attained. It must constantly search out the needs and desires of the customers. It must direct and coordinate the research, production, distribution, and financial functions so that they are effectively and efficiently performed.

Yet, the changing currents in our economic and social life make this task increasingly difficult. The continually changing needs of the customers, varying types of social legislation, increased specialization of labor, taxation uncertainties, problems in securing adequate raw materials, growth in the size of institutions, technological advances, intensity of competition, increasing need for capital—all these factors, and more, serve to ever increase the complexities of management. It is no longer simply a matter of good intentions, any more than it is a question of profit at any cost and the devil take the hindermost. Today the need is for a high degree of managerial skill and intelligence in carrying out the appointed tasks.

These skills imply or require a thorough knowledge of the basic elements of the business and a familiarity with modern management techniques. For this reason, it is felt desirable to approach the problem of managerial control from a general and analytical viewpoint.

The Business Factors. An intelligent attack upon the problems of business budgeting and control should begin with a careful analysis and understanding of the present status of the company. This procedure is not a prerequisite to the study of the mechanics or techniques of budgetary control in their more limited applications. However, such a review should give the proper perspective to business problems. It cannot help but assist in a deeper understanding of the managerial viewpoint, and, therefore, in the longer run contribute to a more effective system of budgetary control.

Any one of several classifications of business factors may be useful in diagnosing business problems. The following appears to be logical and simple:

1. *The Products.* These are the means of satisfying customer demands. Upon them depends the development of the other factors.
2. *The Market.* This has to do with the customers, their location, and the extent of their wants.
3. *The Distribution Program.* This factor relates to the means of getting the product to the market.
4. *The Production Plan.* This relates to the facilities and techniques used to manufacture the product.
5. *The Research and Development Program.* This relates to the efforts and effectiveness in creating new products or improving existing products or product applications.
6. *The Organization.* This element has to do with the employees in the organization, and their duties, responsibilities, and relationships.
7. *The Finances.* This factor includes acquisition and use of capital needed in the enterprise.

8. *The Control System.* This relates to the techniques used to guide the functions so as to achieve the business objective.

The Products. The management audit or review can very logically begin with the product line. For the most effective selling force, a skillfully developed advertising program, an efficient production group, the best equipped plant, and an excellent organization in general will be unable to secure a satisfactory return on investment if the product line is basically one which cannot secure consumer acceptance under such circumstances as to return a proper share of profits. The analysis of the product line or lines must include several phases:

1. *Trends in Sales Volume.* These should be known and explained, and not merely as an over-all sales pattern. Rather, in each territory and for each product the trend should be determined and analyzed as to cause.
2. *Competitive Advantages.* Such a comparison should reveal the weak and strong points of each product. The advantages may not necessarily be restricted to the product itself, but may relate to customer service, etc. Knowledge of these points may disclose sales arguments which may be used more effectively.
3. *Gross Margins.* An analysis of gross margins will reveal the more important products from a gross profit viewpoint.
4. *Completeness of Line.* Consideration of these phases may reveal deficiencies and the cause of wasted sales effort. However, smart merchandising does not necessarily require that all sizes, colors, etc., be handled.
5. *Prices.* This phase of the audit should cover three avenues:
    a) Does the price provide the necessary margin?
    b) Is the price competitive?
    c) Is the price such as to secure the greatest *profit?* The turnover as well as individual unit margin must be considered.
6. *Product Diversification.* Is only one industry served, and is the consumption seasonal? Can other products be fitted into the line so as to promote stability of employment and operations?
7. *Quality.* What is trade opinion on this factor? Does analysis of returns and allowances support the results of field reports?
8. *Design and Styling.* What are the prevailing opinions on this point? Should a market study be made on this aspect?
9. *Identification.* Through the use of brand names, trademarks, method of packaging, and similar devices is the company securing the maximum transfer of goodwill between products?

Answers to such product considerations as the foregoing, and others, will provide a sound basis for business planning. Moreover, such a review can be instrumental in changing the objective of the company as to the area of activity.

The Market. After a thorough understanding of the product has been secured, the next logical spot for study is the market in which it must be sold. Successful marketing of a product requires a good product, properly priced, and an effective method of selling and distribution. Market knowledge is thus seen to be essential in any business planning.

Information about the market may be secured from two sources: (*a*) a study of the internal records of the company, and (*b*) the analysis of data from external sources. Both the qualitative considerations of the market—information as to customer characteristics, such as who buys, what, and how—as well as the quantitative phases—how much and where product is to be sold—must be critically studied. Suggestive of the market information which a company should possess are the following:

1. *Data on Present Customers.*
   - *a*) Who buys.
   - *b*) Location.
   - *c*) Volume of sales for each.
   - *d*) Profitability.
   - *e*) Size of orders.
   - *f*) Method of delivery.

   Such facts may be secured through an analysis of internal records.
2. *Seasonal or Cyclical Characteristics.* Secured from industry sales data as well as company records.
3. *Market Potentials.* A determination of reasonably expected sales volume by products, by territory, by industry, and by customers is essential to the intelligent direction of selling effort. Such data may be developed from government and industry data in conjunction with internal records.
4. *Customer Purchasing Habits, Buying Preferences, Etc.* May be secured through field surveys.
5. *Competitive Activity.* Usually secured through sales channels, trade paper reports, and similar sources.
6. *Technical Advances.* Such developments may affect the demand for the product, whether in the same line or in competitive product types.

This information is fundamental to the development of a sound marketing plan.

The Distribution Program. With a knowledge of the product and the market, it then becomes a matter of examining the effectiveness of reaching that market. This sphere of activity is generally known as sales management, and involves a great many considerations. Suggestive of the subjects to be covered in the review or audit are these:

1. *Selection and Training of Salesmen.* What is the program? Its cost? How does it compare with competitive practice?
2. *Selection of Channels of Distribution and Methods of Sale.* Are the methods as effective as those used by competition? Are the number and types of outlets adequate? What is the relative profitability of the various channels or methods of sale employable?
3. *Determination of Sales Quotas.* Are they related to market potentials? On what basis are they changed?
4. *Sales Territories.* Is full coverage provided? Is the company selling in territories too far from home—uneconomical territories?
5. *Routing of Salesmen.* Are the men economically routed? Does a supervisor aid them? How are calls planned?
6. *Advertising and Sales Promotion Aids.* Are the programs correlated with the sales effort? Is the coverage adequate? Is there coverage where no sales outlets are available?
7. *Salesmen's Compensation.* Does the basis of compensation provide incentive? Does the method secure the type of salesman the company wants? Is there a definite relationship between such compensation and desired sales volume?
8. *Price Policies.* How are prices set? Is provision made for an adequate margin? How is price competition met? On what basis are prices set when business volume is low? How are differing costs of production recognized in quantity brackets?
9. *Other Sales Policies.*
    - *a*) On returns and allowances.
    - *b*) On entertainment.
    - *c*) As to use of company cars.
    - *d*) As to terms of sale.
10. *Distribution Costs.* Are the following costs known?
    - *a*) Distribution costs by territories, by salesmen, by product, or such segment as may be applicable.
    - *b*) Costs per dollars of sales, per call.
    - *c*) Freight equalization by areas.
    - *d*) By functions, such as warehouse handling, credits and collections, packaging, order handling.

    Have distribution cost standards been set, such as number of calls per day, dollars of sales per call, cost per mile traveled?

Such information will reveal the strong and weak points of the company from the marketing viewpoint.

The Production Plan. When the major characteristics of the product, its market, and the program for reaching that market are known, the next logical area of study is the plan for manufacturing the product. There are three major subdivisions:

1. Materials, parts, and supplies.
2. Plant and facilities.
3. Production process.

Suggestive of the topics which need to be considered are the following:

Materials
  1. Relative share of cost represented by raw materials or purchased parts.
  2. Sources of raw material and their adequacy.
  3. Program of reviewing materials and searching for cheaper substitutes.
  4. Competitive position in regard to raw materials.
  5. Method of inventory control.

Plant and Facilities
  A. *Location*
    1. Location of manufacturing facility in relation to major market.
       Are freight costs, including freight equalization, high?
    2. Location in relation to raw materials.
       Again, the problem of freight costs arises.
    3. Location of warehouse facilities in relation to market.

  B. *Layout and Adequacy*
    1. Layout of equipment.
       Is plant layout such as to avoid or minimize back handling of material in the manufacturing process?
    2. Adequacy of space.
       Is there adequate space for the storage of raw material and finished goods? Or must expensive public warehousing be used? Is sufficient space made available for the service departments?
    3. Plant capacity.
       What is normal capacity? Maximum? In relation to market?

  C. *Production Methods*
    1. Extent of time and methods study.
       Is there a planned program for cost reduction?
    2. Method of determining and revising bill of material.
    3. Existence of incentive plan for hourly labor as well as supervision.

4. Production control system.
5. Labor rates in relation to market.
6. Inspection and quality control methods.
7. Maintenance program.
   Existence of preventive maintenance program. Knowledge of maintenance cost by piece of equipment, etc.
8. Relative production costs as compared to competitors.

Such a review should reveal the strength and weakness of the production facilities and methods.

Research and Development Program. To an increasing degree the life of a business enterprise is dependent upon an adequate program for the development and improvement of the company's products. While the chemical industry is often given as a prime example, the principle is applicable to most industries. These points will provide a background for appraisal of this function:

1. What new or improved products have been developed in the past five years? What share of total sales do they represent?
2. What is the nature of the research program? Are *specific* projects assigned for research purposes and periodically reviewed as to progress? Are probable benefits measured against cost?
3. What is the extent of correlation between the research department and the sales department as to new products? Is there a smooth transfer from a laboratory product status to a commercial status?
4. How do the expenditures for research and development compare with industry or competition as to total amount or per cent of sales dollar?
5. To what extent are independent laboratories used to add flexibility to the research staff?

The Organization. It is desirable to survey the product and the primary business functions. Yet, certain other basic weak or strong points may be revealed by an objective study of the organization itself, quite separate from the viewpoint of any individual function. An organization may be defined as a group of individuals, under leadership, working toward a common goal. This is the dynamic, the vital part of the business, upon which all else chiefly depends. As Andrew Carnegie is reported to have said, "Take away my mills, but leave me my organization and I will be back in business in a year." Some of the basic problems of business arise by reason of organization troubles. The business functions must be properly segregated, and the relationship between functions and organizational groups must be clearly defined. Some of the specific points bearing on the problem are:

1. *Organization Chart*
   - *a*) Has an organization chart been prepared?
   - *b*) Are the line and staff relationships evident?
2. *Manual of Organization.* Is a manual in existence which, in detail, outlines for supervisory personnel at least the following:
   - *a*) Title of position.
   - *b*) Position to which responsible.
   - *c*) General functions and responsibility.
   - *d*) Detailed duties and responsibilities.
3. *Standard Practice Instructions.* Are such aids available as to the repetitive and routine functions, indicating (*a*) the responsibility of the several departments, and (*b*) the procedure to be followed?
4. *Selection of Personnel.* What basis is used?
5. *Training of Personnel.* Has any program been established—for either formal or informal training?
6. *Coordination of Functions.* How is coordination attained?

Financial Strength and Organization. Financial or accounting controls will be reviewed in the next section. These pages relate to the noncontrol phases. In brief, the financial strength must be available to carry out the sales, production, and research programs. As a general survey of this aspect, the following matters should be checked:

1. *Soundness of Financial Structure*
   - *a*) Sources of working capital.
   - *b*) Analysis by use of ratios.
   - *c*) Nature of indebtedness.
   - *d*) General credit standing.
2. *Return on Investment*
   - *a*) Adequacy as related to total assets used in business.
   - *b*) Adequacy as related to net worth.

The Control System. The last important business factor to be considered in a management audit is the control system. Preceding sections have dealt with a review of the specialized functions of the enterprise—distribution, manufacturing, research, and finance. Yet, it is not enough that each of these activities be seemingly well-performed in and of itself. Management must *know* that these tasks are being efficiently executed; there must be little guesswork. Furthermore, each activity must be kept in balance with the related activity. For example, the production program must keep step with the sales program. Inventories must be kept ample to meet customer needs, but should not become unduly high. And how are these things accomplished? Just as the mortar binds the bricks in a building, so also the accounting control system provides the information and procedures for the proper guidance of the business and the coordination and proper integration.

Why is such a system necessary? When the enterprise is small, direct or *personal* observation and control may be exercised by the owner or manager. However, as the size of the organization grows, this high degree of personal contact between each individual employee and the manager is largely lost. Other means of control become necessary; and this means is an adequate reporting system. Fundamentally, the process becomes one of:

1. Setting a standard of measurement.
2. Comparing actual and standard performance.
3. Ferreting out the cause of variance.
4. Taking the necessary corrective action.

The standards must be set by those best qualified by experience to judge exactly what constitutes good, acceptable performance. Actual results must be reported by an independent and unbiased agency—the accounting department—and compared with the standard. From appropriately designed reports, those whose performance is being measured must be advised of their progress. By like token, management is advised of the degree of performance, trends, and relationships. Through the use of such reports, management is enabled to plan, supervise, evaluate, and coordinate the activities of the various departments or divisions.

Accounting control of operations is the use of accounting and statistical reports as part of a well-conceived plan to maintain the pressures necessary for efficiency, and to expose unfavorable trends or variations. Thus, it can be seen that such control is a necessary ingredient in modern business management.

Status of Budgetary Control. Varying degrees of accounting control may exist in a given business organization, quite independent of budgetary control. Standards may be used to measure labor efficiency or material utilization as separate and unrelated matters. Again, standards may be used in one department and not another; and there may be no control on the total expenses of a given function. These standards may not be tied into the financial plan.

It is perhaps clear, then, that budgetary control, as commonly defined, is but one type of accounting control. However, it may easily rank as the most important. The business budget may be defined as a coordinated plan of financial action for the enterprise. It can thus be distinguished from other accounting controls chiefly because budgetary control, if properly installed, does these things:

a) Encompasses all the business operations and not merely a given department or certain types of costs.

b) Relates sales income in total and by segments to the corresponding costs and expenses.

c) Establishes predetermined operating objectives and is forward looking; and is not restricted merely to a comparison of actual results with standard.

The technique of budgetary control will become clear in the succeeding chapters.

Chapter 2

THE PURPOSE OF BUDGETING

Need for Intelligent Planning. A business budget has been defined as a financial plan. The keyword is *plan.* Most human endeavor is more fruitful if directed by a well-advised and intelligently conceived program. The conduct of business is no exception. There are, however, many business concerns in which the plans for the future are highly indefinite—far more so than necessary. These concerns are simply on their way—where, how, why, and when are questions which are decided from day to day as the exigencies of the situation demand. No sustained and continuous effort is made to chart a future course which would seem, all circumstances considered, to point the surest way toward the ultimate port of business success. If you question the general executives in such concerns, you will usually find that they have some vague ideas as to a program but that no intensive study has been made to determine whether such a general course is the most profitable one which could be pursued. If you question the sales executives, you will find that they expect to do 10% more business than last year, although in just what products or territories or by what sales projects there will be only vague ideas. If you question the production executives, they will tell you that their program depends largely upon sales orders and that naturally these cannot be known in advance. As the orders come in they will make their plans accordingly. If you closely question minor executives, superintendents, department heads, foremen, and salesmen, you will find that few of them actually know just what the management is trying to accomplish. Their programs will actually be to go along from day to day as best they can, hindered as frequently they are by uncertainty as to the general program.

In such concerns, operations would be more efficiently conducted and profits would be greater if management gave careful study and attention to planning its activities in advance. Many concerns, particularly some of the large American corporations, are now giving the most exacting study to this phase of the management task, but thousands of others are either neglecting the task entirely or planning their operations in a superficial manner.

Advantages Gained by Business Budgeting. A fundamental purpose of business budgeting is to find the most profitable course through which the efforts of the business may be directed in meeting its primary service objective. Another purpose is to assist management in holding the business as nearly as possible on that charted course. In most business concerns there are numerous decisions to be made as to the policies to be followed and the methods to be used. Decisions must be made, for example, as to the choice of goods and services which are to be made and sold, the selection of customers, the level of prices, methods of production, methods of distribution, credit terms, methods of financing, degree of integration of operating units, and so on, almost without limit. Which selection of policies and methods will be most profitable? Can any combination be found which gives reasonable promise of an adequate return on the investment? If none can, the venture should be stopped, the business merged with another, or the capital shifted to other channels, before further losses result. If profitable courses are open, each should be examined and translated into its profit possibilities.

While it is easy to speak in general terms of the desirability of budgeting, the practical advantages in an actual case are not always so apparent. Conditions change rapidly in business; the actions of customers and competitors cannot be entirely controlled and after they become known a business must, to a degree, govern itself accordingly, regardless of any previously developed program. Plans, when made intelligently, require exhaustive study and research, and this constitutes an expensive procedure. What, then, are the specific advantages to be gained?

The benefits of budgeting lie in three primary fields of business activity: first, directly in the *planning;* second, in the *coordinating* phase; and, third, in the *control* area. These activities are each very wide in scope and contain within themselves several supplemental or detailed advantages. A somewhat more concrete outline of the reasons for budgeting is as follows:

PLANNING.

1. *To base action upon thorough investigation, study, and research.* Perhaps the cardinal advantage of systematic budgeting is that it tends to bring the executives to an early study of their problems and instills into the organization the habit of careful study before decision as to action. This is not easy to achieve. Intensive study is to many a dis-

tasteful exercise. Most of us prefer to postpone difficult decisions until necessity compels. Businesses as individuals tend to become opportunists; they wait until a decision is forced, then turn quickly, often without time for careful study of the problems, in the direction offering the easiest immediate escape from their troubles.

If the executives, from general manager to foremen, know that their plans are to be formally expressed and that they will be charged with responsibility for their execution, they can be brought to an earlier and more intensive study of the problems at hand.

This habit of making plans will benefit every activity. Specifically, it will relate to financial requirements, inventory levels, production facilities, production, purchasing, advertising, selling, sales promotion, product development, organization growth or expansion, labor relations—in short, the advantages can accrue to every function.

2. *To enlist the assistance of the entire organization in determining the most profitable course.* When budgeting is undertaken in ample time and on a regular schedule, there is full opportunity to enlist the assistance of foremen, salesmen, branch managers, department heads, and all operating officials—major and minor. In some lines of business the suggestions and counsel from such sources are essential to the development of the best operating plans, and in most lines of business such assistance is highly desirable. The final plans should be expressive of the combined judgment of the entire organization, thereby eliminating such bias or prejudice as frequently affects the judgment of individual groups.

3. *To serve as a declaration of policies.* Nothing so restrains the enthusiasm and energy of an organization as uncertainty. The budget procedure provides a vehicle through which basic policies are periodically re-examined, restated, and set forth as guiding principles for the organization at large. Basic policies, not temporary expediency, should be the guiding factors of a business and the organization should be schooled in such policies.

4. *To define objectives.* The successful manager must surround himself with capable associates who will accept his leadership and execute his program. But he must demonstrate his ability to lead. Men will follow a leader when they realize that he has a sensible plan of action and definite objectives in mind. Such objectives should be clearly expressed, and, to a certain degree, should stand as goals of attainment for the entire organization. Objectives, however, must not be the product of hope but rather the logical consequence of carefully laid plans. The executive who can clearly define his objectives and delineate a program which can logically be expected to reach such objectives can command the cooperation and loyalty of his associates.

5. *To stabilize employment.* No employer of labor, regardless of his social or economic philosophy, can longer disregard the welfare of his employees. We have passed the time when workers can be laid aside at will when not needed, as flasks or patterns in the foundry. To be sure the responsibility to workers must be balanced with the responsibility to investors and the welfare of both must be considered, but the business program must consider stability of employment. Intelligent business budgeting rather than governmental regulation offers the greatest hope for providing stability of employment.

6. *To make more effective use of physical equipment.* During the course of planning, the excess cost of idle capacity will be revealed. Moreover, in considering those plans which offer the greatest profit, the maximum use of available facilities will inevitably be a factor. The result normally would be the elimination of some of the social wastes related to the uneconomical use of physical facilities.

COORDINATION.

1. *To coordinate and correlate human effort within the business structure.* In some respects this is the most important purpose of budgeting. In many concerns there is a definite lack of coordination of effort. This is a restraining factor. Full steam cannot be applied in some divisions of the business because of uncertainty as to the program in other divisions. Only when the effort of all divisions is properly timed and coordinated can the full power of united action be secured.

This, however, emphasizes another important element of budgeting and that is the necessity of constant review and revision of the plans. If unforeseen and uncontrollable situations arise (and in many industries this is certain to happen), which materially alter the operations of one division, the machinery must be available for quick readjustment of the program in other divisions affected thereby. Wars, floods, droughts, strikes, price wars, political changes, collapse of foreign markets, etc., give rise to such situations.

The success of business budgeting should be measured not so much by the nearness of the ultimate results to the original plans as by the extent to which all executives—major and minor—know at all times just what is the immediate program and what are their respective parts therein. There must be no restraint or uncertainty if the organization is to function with full power.

The chief executive is the final coordinating official but the complexities of the modern business are such that he cannot exercise this function without the assistance and guidance of clearly defined objectives and detailed plans which are projected throughout the entire organization.

2. *To relate the activities of the business to the expected general trend of business conditions.* Numerous studies have been made which would seem to indicate that profits are fully as much (if not more) the result of changes in fundamental conditions as of competitive efficiency. This emphasizes the importance of coordinating the plans of the business with the general trend of economic conditions. The failure of economists to agree upon the causes of the business cycle and the frequent difference of opinion among business analysts as to future trends have led many executives to the point of skepticism regarding the whole matter of forecasting; however, the fact remains that business moves through periods of activity and depression and that there are frequently signals of the movements as related to a particular business. These signals must be watched and the plans of the business must reflect courage or caution depending upon the expected trend.

3. *To direct capital and effort into the most profitable channels by means of a balanced and unified program.* Before spending money serious study should be given to the amount which can be profitably spent, where it is to come from, just how it should be spent, and what results may be reasonably expected. A certain amount of funds must be directed toward equipment and inventories and a certain amount to the promotion of sales; but these amounts must be kept in proper balance. No more ambitious project should be attempted than that for which there is available capital, no more production should be made than that which can be profitably sold, and no sales program should be developed beyond that needed for the planned production. Such a balance of factors directed toward a definite objective represents the ideal and, while it can seldom be fully achieved in practice, its attainment will be more likely as a result of careful advance planning. Without such planning, inventories are likely to be out of proportion to sales and production requirements, customers may be excessively financed, and irregularity is likely to arise in the use of production facilities.

Where plans and decisions are made from day to day, the program frequently becomes unconsciously warped. Executives are often, through previous training or experience, biased in the direction of sales, engineering, or finance, with the result that one factor receives a disproportionate emphasis. A well-balanced program set up in advance and based upon careful study will help to avoid this danger.

4. *To reveal weakness in organization.* As plans are made and the responsibility for their execution delegated, weaknesses in organization will be revealed. Executives will not accept responsibility unless lines of authority are so delineated that they will be unhampered in the execution of their tasks. Where joint responsibilities are necessary, pro-

vision must be made in advance for an orderly procedure of joint action. No management activity so quickly reveals weakness in organization as the procedure of systematic budgeting.

CONTROL.

1. *To control specific operations or expenditures.* While the primary purpose of budgeting is to ascertain the most profitable course for the business to follow and to develop a balanced and coordinated program which will hold the company to that course, the budget also provides a valuable tool of control over certain business operations.

Some operations and expenditures are subject to very definite control. It may be decided, for example, that $200,000 should be invested in plant expansion, that $100,000 should be appropriated for various sales promotion projects related to a new product, that 1,000 units of the new product should be sold during the period under consideration, and that these units should be manufactured at a cost of $200 each. Assuming that the plans have been predicated upon careful study and the considered judgment of the entire organization, the foundation has been laid for a certain degree of control. The investment in plant can be rigidly held to the prescribed limits in spite of the enthusiasm of production officials to go beyond. Likewise the expenditure for sales promotion can be definitely held to the predetermined plan. To be sure, the orders for 1,000 units may not be realized. This might result from the fact (1) that external conditions have changed rapidly and that such changes could not be foreseen; or (2) that the sales promotion projects were not as effective as expected; or (3) that the production of the units—either in quantity, or cost—has not met expectations. In such cases the budget provides a certain degree of control. Expenditures are limited and directed into the channels which offered most promise. If external conditions beyond the control of management change, the program must be promptly revised. If such conditions do not change and failure of execution lies within the organization, the budget serves as a very definite tool of control. The failure of sales and production performance to meet expectation provides the signal for corrective action.

2. *Generally to prevent waste.* This is a more general aspect of control. A searching inquiry into every contemplated expenditure and the reason therefor—an analytical approach extending to every function and every department of the business—will constitute an effective preventive of waste.

It can be seen that many of these specific advantages are very closely related to all three primary reasons for budgeting. However, the segregation should assist in a better understanding of the basic advantages of business budgeting.

Application of Budget for Both Control and Coordination. In constructing the budget there might appear to be, at first blush, a conflict in using this device for both control and coordination purposes. A knowledge of what can be done and what in all probability will be done are both essential to good management. The former must serve as a basis for the control of performance; the latter as a basis for the correlation and coordination of operations. Obviously, there should be a close relationship between what a worker, salesman, or minor executive can do and what we may expect that he will do; but they are frequently not the same. If a salesman can sell ten units but our expectation is that he will sell only eight in the period under consideration, then the question is whether we should budget in terms of ten or eight. If we budget ten units, the budget will serve as a standard or measure of performance but it will not serve to balance and coordinate our operations. If we plan for the financing and production of ten units, we shall in all probability have 25% more goods than we need. If we budget eight units, the budget will serve to balance and coordinate operations, but it will not serve as a standard by which to measure performance.

Based on many years of experience in managerial accounting and with budgeting problems, the authors are of the opinion that the budget must be based on *actual* expectation. However, the connecting link between actual expectancy and standard performance is the variance. In all probability this variance as to manufacturing costs will be formally expressed as such. For example, excess material usage, excess material price variance, excess direct labor costs, excess manufacturing expenses resulting from substandard volume, or excess manufacturing expenses resulting from inefficiency may be set out in the statement of estimated income and expense. In other instances, particularly as to selling expenses and related operating expenses, this variance might appear in the work sheets and as a factor in analyzing excess costs, without appearing in the accounts. One factor is the method of accounting for such items—whether standard or actual.

The authors believe that, fundamentally, in reviewing the details of the budget, in planning for profit, and in analyzing performance, both standard achievement and normal expectancy must be considered. The bridge between the two is recognized through variances analyzed by cause.

Chapter 3

BASIC CONSIDERATIONS IN BUDGETING

Essentials to Successful Budgeting. There are at least four conditions essential to a successful budget program. These requisites may be briefly summarized as follows:

1. Sound Organization. While one of the advantages of budgeting is that it will reveal weakness in organization, it is conversely true that the budget cannot be developed successfully until the concern is properly organized. Indeed, satisfactory organization is the first essential to successful budgeting. Reduced to its simplest terms, organization consists of an intelligent grouping of tasks, a coordination of the work of groups, the establishment of definite lines of authority and responsibility in the execution of the tasks, and a procedure for enforcement of the responsibility so assigned.

In so far as effective budgeting is concerned, there are two phases. *First,* responsibility and authority must be clearly defined for *all* functions. In the absence of such clear-cut lines of organization, it will be next to impossible to place responsibility for performance which does not meet budget. Moreover, confusion as to responsibility will make it difficult to secure the requisite data in constructing the initial budget. *Second,* and supplementary, these principles must apply to the budgeting function itself. Someone must be definitely placed in charge of the budgeting procedure. Usually the controller, the chief accounting officer, is the logical person to assume this responsibility. Then, too, the responsibility of each official in regard to budgeting must be clearly set down in writing.

2. Satisfactory Accounting. To a considerable extent the future program must be guided by the company's past experience. The accounting records must reveal past operations in all necessary relationships. It is not enough to know that sales, costs, and profits were so much. The records must reveal what goods were sold, to whom, when, how, and where; what the costs were to make and sell the goods; the detailed components and relationship of these costs; and the profits

resulting from the numerous projects. It must be possible further to determine from the records the relationships of costs and results and the efficiency of individual, divisional, and functional performance. Moreover, important trends must be revealed in both operating and financial relationships.

3. Research and Analysis. To be sure, some elements of a budget are based on past performance. But this is not enough. The management task is to know not only what *has been* attempted and accomplished, but also what *should be* accomplished. Such an approach must be founded in an attitude of continual search for newer and better methods. This applies no less to budget and performance standards and techniques than it does to the other business factors mentioned in Chapter 1.

4. Support of Major Executives. A successful budget program must have the active support of the chief executive and the major functional officials of the business. Each must be made aware of the need and advantages of a budgetary control system to him individually and to the business. When this understanding is reached, the necessary cooperation usually will be forthcoming. In this connection it is to be noted that the procedural part of the budgeting task can be delegated to the controller or other executive, but the final executive force necessary to motivate action must come from the chief executive.

Applicable to All Types and Sizes of Business. While the basic idea of budgeting is obviously applicable to all types and sizes of business undertakings, the method of application does vary. In a company manufacturing steel railroad cars it is difficult to make immediate future plans because of the uncertainty of volume. The company may have made bids on 1,000 cars. It may receive all or none of this business. In the latter case operations will consist merely of minor repair work. If a quarter-year is under consideration, the volume may vary from $100,000 to $1,000,000, depending upon the acceptance of bids. Here the plans for the immediate future must wait until the result of bids is known. Looking over a longer period, however, the problems are normal. Does the outlook for the industry and for the company at hand justify more or less capital? What changes should be made in plant facilities? Into what pattern should the asset and equity relationships be directed? What changes should be developed in sales, production, and engineering methods? Should new products be developed? These questions suggest the need of study and plans for the longer period. When volume is known for the immediate future, detailed plans must be developed also for the shorter term.

At the other extreme is a company operating a chain of large public parking garages in numerous cities. Volume arises from thousands of small transactions daily. The margin of profit on each transaction is small; operations must be highly efficient; fixed charges and labor costs are high. To a certain extent volume can be predetermined by price policies and sales promotion effort, but, except for general business conditions and seasonal fluctuations, volume is fairly stable. Here the plans for the immediate future can be developed regularly and translated into expected operating results. Moreover, the long-term plans are fully as important as in the company mentioned above.

The difference in the problem of budgeting for the two concerns is mainly in the regularity of the short-term plans. While such variations of application will be met, the basic purpose of budgeting remains the same for all types of concerns.

Likewise, the size of the concern has little bearing upon the necessity for budgeting. Many smaller concerns fear that a formal budget procedure involves too much red tape. Any intelligent planning and control of business requires extensive study, be the company large or small, but there is no substitute. The small concern has the advantage of close personal supervision and direction, but this is not a substitute for intensive study as to what has been done, what should be done, and how best to do it. The procedure is easier in the small company but no less important.

The small concern is likely to view with alarm the multiplicity of forms used by the larger concern in building up its program. These suggest an expensive procedure. While forms as such have nothing to do with the basic purpose of budgeting, certain record and clerical work usually accompany any intensive business analysis. If in the development of the budget, weaknesses are revealed, dangerous roads avoided, and profitable courses found, the clerical cost will be of little consequence.

Period Covered by Forecast. In making the business plans for the future, a matter to be settled is the period to be covered. Should plans be made for the week, or month, or year? Two considerations should guide the decision: (1) the purpose of the plan, and (2) the reliability of the information. Some planning may be described as short-term, and will relate to the week, month, or year. The great majority of companies probably budget for a twelve-month period, month by month. Others prepare a forecast by months for the first quarter of the year and by quarters thereafter. Under conditions that require closer review, monthly budgets would appear to be most common. Such circumstances necessitating more frequent review would include low-margin products, bank loans, seasonal income, and government contracts—generally conditions which require review as a matter of agreement or prudent business practice.

A substantial number of companies, particularly the larger ones, budget for long-range planning purposes and cover a period of perhaps five or ten years. Long-range plans may be needed for intelligent product development and plant expansion, and are of assistance in securing the necessary funds. It is to be noted that as the period covered by the forecast lengthens, the projection becomes less detailed. Typical practice in long range budgeting is as follows:

First year	Monthly budgets
Second year	Quarterly or semi-annual budgets
Third year	Semi-annual or annual budgets
Fourth and Fifth, etc. years .	Annual budgets

An example of an ice cream manufacturer may illustrate a practical application regarding the length of the budget period. Looking ahead some five or ten years such a manufacturer may, after due study, come to the conclusion that the outlook in his industry, in his territory, for his products, etc., justifies a program of plant expansion and a gradual enlargement of his production and distribution facilities; hence, plans are developed accordingly and the effort of the entire organization is coordinated and directed to that end. A program of capital expenditure is developed for a five-year period, with tentative plans even beyond that time. At the same time it is expected that the trend of prices in certain major items of material, notably sugar, will be downward during the next few months; hence, commitments in these inventory items will be held to the very minimum requirements. Finally, the day-to-day production will be regulated to a considerable extent by weather conditions. Here the plans for part of the activities are projected several years in advance, for others only a few months, or even a few days.

If the purposes of budgeting are clear there will be little difficulty in determining the length of the budget periods. Such matters as normal turnover periods, seasons, length of production period, etc., must be considered, but the length of the budget periods need not be rigidly established. Plans will vary in length of time for different types of operations within the same concern. Moreover, the periods may be shorter in times of marked uncertainty than under more stabilized conditions.

Frequency of Budgeting. A related problem is the frequency of budgeting; that is, how often the budget or forecast should be made.

This is not necessarily the same as the period of the forecast. For example, a company may prepare a budget covering a two-year period, but may go through this procedure every six months. Most companies who prepare budgets do this for the coming year, and many revise the estimates each quarter. Companies whose business is subject to a marked seasonal influence may use the natural business year, starting at the time when inventories and accounts receivable are at their lowest point.

There is much to be said in favor of a continuous, as opposed to a periodic, program of budgeting. If definite plans can be made one-quarter year in advance, they may be revised monthly, progressively dropping and adding a month, thereby always keeping a three months' program ahead. If a tentative program can be made for one year, this may also be revised monthly or quarterly by the same progressive procedure. This is particularly advantageous in a seasonal business. As one month ends, plans can be laid for the corresponding month one year hence while seasonal conditions are fresh in the minds of the executives and subordinates. A further advantage of continuous budgeting is that it keeps the problems constantly before the organization with a continuous process of examination and revision. Moreover, budgets which are continuously revised are more useful as control tools. In fact, when the budget serves in an effective way as a control mechanism, frequent revisions are mandatory in all but the most stable companies.

Revealing Information to Minor Executives. One of the problems certain to be met in the work of budgeting is the objection to revealing information to subordinates. The objection is usually based on the fear that operations will slow down if it appears that work is to be scarce; that the information may reach competitors; or, if profits are running high, that subordinates will insist on higher pay. The force of these objections varies with the nature of the facts to be revealed and with the size of the concern. The objections arise more in small concerns than in large ones. While no one can deny the fact that individual circumstances arise in which it seems best not to reveal certain facts to subordinates, it is a poor organization where this is the general policy. Such a policy invariably indicates executive weakness and in due time breeds distrust, dissension, and disloyalty. The strong executives are the ones who do not fear their subordinates but boldly demand their interest, counsel, and intelligent support both in making and executing plans; and who recognize that such subordinates must to a considerable degree be given the facts upon which plans and operations are based. This is the only policy by which loyalty, cooperation, and strength of organization can ultimately be developed.

A positive approach to the problem requires that each echelon be given the information for its area of activity. It does not mean that everyone be given *all* the information. When the opinion of the subordinate is welcomed, and when he is given the data related to his activity, he will usually exert his best efforts to improve the operation.

Securing Cooperation Throughout the Organization. For the most effective budgeting, the best human engineering is needed. Most people want recognition, and the budget offers such a chance. To begin with, department heads and minor executives usually feel they have some ability and judgment, or else they would not have been selected for their positions. Therefore, it follows, from their viewpoint, that if any plans are to be made, they should participate.

Those who are responsible for executing the plans should have a part in making them, but this does not mean that the responsibility should rest entirely with subordinates. The entire organization should share in the plans, contributing one to another pertinent information relating thereto. Before a subordinate is asked to suggest plans, he should be supplied with information concerning conditions beyond his control, actual past performance, new developments, and all facts which will assist him in making an intelligent decision. The chief janitor may not know that there is almost certain to be a 10% increase in the cost of his major item of supplies, that the head of the maintenance department is considering the investment of $1,000 in a large electric cleaner, and that the man-hours in another of the company's plants have been cut 20% by the use of such equipment. If plans are to be made intelligently, all such information must be made available. It is quite possible that the chief janitor of this plant, being intimately familiar with the situation, will see where the installation of two smaller cleaners, or two units to be operated simultaneously, would reduce his man-hours by 25%.

The illustration may be overly simple, but the principle is sound. There is no escape from the fact that the best plans result from the interested judgment of the entire organization, reaching from bottom to top.

While the above point deserves considerable emphasis, it must not be misconstrued. No plans suggested by a subordinate should be accepted when the judgment of superiors indicates that they are wrong, nor are the plans of the business to be a collection and summarization of the estimates of numerous subordinates. The major executives must make the final decisions. But subordinates should have their say.

If their suggestions seem wrong, then the matter should be discussed with them in an effort to convince them that other plans would be more effective. The educational value of budgeting is one of its chief advantages. It is here that the controller, or man in charge of budgeting, has a golden opportunity. He should know his organization and its personnel. Men must be dealt with as human beings. They must be given a chance to talk and they must be talked to about the plans. A formal interchange of figures on prescribed forms is not enough. The man in charge of the planning procedure must go to the branch and sit down and talk it out with the branch manager or the superintendent or department head. Different individuals must be handled differently but finally each must be made to feel that he has had a full opportunity to participate in the building of the program.

Support of Major Executives. As stated above, there can be no effective budgeting without the full strength of the executive force behind it. Executives, major and minor, must know that the chief executive insists upon the investigation, study, and decisions necessary to develop intelligent plans. Conversely, they must feel that the chief executive himself will come forward at the proper time with the necessary decisions as to the policies which are to be the guiding factors upon which the functional operating plans are to be developed. The direction of the procedure by which the plans are developed and coordinated can and should be delegated to a budget official. Such a practice will leave the chief executive free for the consideration of basic problems such as the development of new products and better methods of production and distribution. However, ultimate responsibility for the budget and its enforcement cannot be delegated.

As the budget is developed it should be placed in broad outline before the board of directors with a statement to the effect that this is what the management intends to do and why, and this will be the probable outcome in terms of operating results and financial conditions; that these plans are based upon expected conditions in so far as it is possible to foresee them and that they will obtain unless new and unforeseen conditions develop, in which case prompt revision will be made and submitted.

Who Should Prepare the Budget? To be sure, the budget is a cooperative endeavor—from the assistant foreman to the chairman of the board. Yet, someone must be assigned the responsibility of establishing and revising procedures, securing and coordinating the data, checking and verifying the information, and expressing the final answer in financial terms. In most companies this is the function of the chief accounting official, the controller. The reasons for this selection may be stated as follows:

1. His purview extends to all functions of the business.
2. Since he is primarily a staff officer, he is detached from functional responsibility, and therefore he is best able to maintain a neutral, unprejudiced, and unbiased attitude.
3. Budgets are based largely on past experience. One of the chief tasks of the controller is to collect, analyze, and interpret data relative to past performance, and to translate this information into useful signals for the future.
4. The controller is, or at least by the nature of his training and experience should be, the best analyst in the company.
5. He is in a position to translate proposed plans into their effect upon operating results and financial position.
6. Effective budgetary control requires that budget allowances and actual charges be on a parallel basis—that the same accounts be used for the same purpose. When both the budgeting activity and accounting activity are controlled by the same official, the coordination and correlation on this point is likely to be more positive.

In large concerns an official may be designated to devote his entire time to budgeting. Such an official should generally be under the jurisdiction of the controller. He is sometimes designated as assistant to the president and made directly responsible to the president. While the planning procedure should logically be in charge of the controller, this should be the case only when the controller is alert to his full opportunities and responsibilities. If he is not, someone else must be selected.

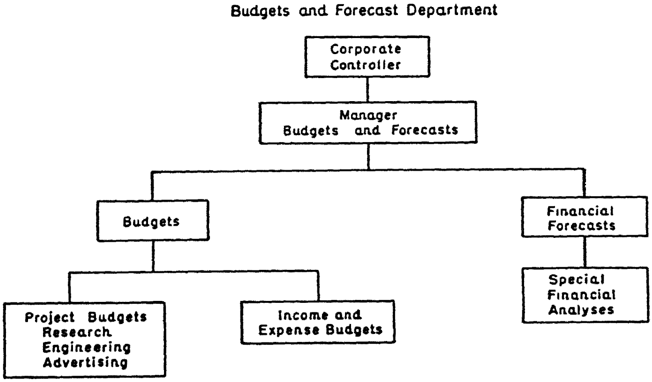
Budgets and Forecast Department
Corporate Controller
Manager Budgets and Forecasts
Budgets
Financial Forecasts
Project Budgets Research Engineering Advertising
Income and Expense Budgets
Special Financial Analyses

FIGURE 1. Organization Chart for the Budgets and Forecast Department

A typical organization chart for a budget department is illustrated in Figure 1. There are several variations. Sometimes the standards development and revision is included with the budget function.

Budget Committee. In some concerns, particularly larger ones, it is desirable to create a budget committee. Such a committee, usually consisting of the heads or representatives of major departments, should serve in an advisory capacity to the budget official. The chief executive or budget officer should serve as chairman of the budget committee. While such committees are useful and in some cases essential, they are not a substitute for the budget executive. Their function consists mainly in offering advice and suggestions and in interpreting the program to the organization at large.

Controller's Part in the Work of Budgeting. It should be emphasized that the controller does not *make* the budget—this is the responsibility of the chief executive, supported by the entire executive group—but the controller should be in charge of the *procedure* by which the budget is developed. Accountants have been accused in the past, not without foundation, of spending too much time in finding out what has happened and too little in helping to make things happen. The modern controller has one of his chief opportunities in helping to develop the plan of action for the immediate future. Specifically, the duties of the controller in relation to budgeting may be stated as follows:

1. Prepare all necessary forms, schedules, and manuals of instruction necessary for carrying forth the budgeting procedure. This should cover all procedure relating to preliminary suggestions, review, revision, adoption, and transmittal.
2. Supply all executives, major and minor, with such analysis of past operations as may be useful in determining future plans and assist in the interpretation of these data.
3. Translate proposed policies and plans into their detailed requirements and their probable effect upon operating results and financial condition.
4. Receive preliminary estimates, transmit them through the proper channels for review and revision, and transmit final plans to those concerned.
5. Keep all executives informed as to the execution of the budget. Analyze the variances between the budgeted and actual results and, in so far as possible, interpret these variances in relation to cause and effect.
6. Initiate prompt revision of the budget, as circumstances require, in order to maintain a coordinated program.

To perform these duties efficiently, the controller must be an accurate analyst and a sympathetic counselor.

Basic Factors Underlying Budget. There are certain basic factors underlying the development of a future program for a business concern. These relate to the opinion of the management as to the desirability of expansion. Just how ambitious or aggressive is the management? Is the company to maintain only its relative present amount of business?

Whether a concern *should* push on to a larger share of the industry's business gives rise to such questions as:

1. The efficiency of larger-scale production and distribution units and the point of diminishing returns on capital invested.
2. The rate of growth of the industry itself.
3. The requirements for new capital and their effect on present control.
4. Political restrictions and interference.

Determining the Economical-Sized Unit. The production of automobiles and steel sheets does not lend itself to small-scale operation. Unless a concern is to have a substantial share of the respective industry's volume it will hesitate to enter one of these fields. In the job printing industry, on the other hand, operations are typically on a relatively small scale. Between such extremes there are many industries and trades which are operated successfully on both a small and a large scale; for example, retail stores are operated successfully both as individual units and as large chain establishments.

In developing the program for a particular business, attention must be directed to the determination of an economical-sized unit. Can the concern in question push on to a larger share of the industry's volume or to larger producing and selling units and retain the necessary degree of operating efficiency? Will horizontal expansion and vertical integration weaken or strengthen the position? Where is the point of diminishing return on capital invested?

Normal Growth of Industry. A further basic consideration is the normal growth of the industry of which the concern is a part. Have old products and services reached the saturation point? Are they being replaced by other products from other industries? Are new products and services being developed by the industry? What is the effect of population changes on the growth of the industry? Are foreign markets expanding? In the manufacture of shoes, for example, there is a close relationship between volume of production and population changes. In the electrical industry, on the other hand, population trends may be overshadowed by the development of new products.

To a certain extent, an individual concern, or the leading concerns within an industry, can themselves effect the answer to normal growth, particularly if they dominate the industry. This may be accomplished by aggressive research and experimentation. In any event, effect must be given to such growth in developing the business program.

Available Capital. Another basic factor in budgeting is the amount of capital available. In large concerns with an established market for their securities, it is usually possible to attract as much capital as needed for any program which shows promise of success. Even here, however, the cost of carrying the capital load and the danger attendant upon preferred claims for profits and control must be considered. In small companies, particularly those closely held, the additional capital which can be secured at reasonable cost and without endangering control may be definitely limited.

A corollary to the problem of available capital is the limitation of plant capacity. Plans may be definitely restricted by such capacity unless capital is available for plant expansion. Small concerns can usually secure additional funds for working capital to utilize existing plant capacity with much less risk than for plant expansion.

Political Restrictions and Interference. A further consideration is that of political restrictions. There has been a definite trend in recent years toward increased governmental interference with business. Some such interference has been directed toward the size of the business or the number of operating units. For example, license taxes are frequently graduated upward according to the number of operating units. While attempts artificially to regulate the size of concerns rather than to permit them to seek their own level of highest operating efficiency appears to the authors to have no sound economic or social foundation, yet the probability of such action must be considered in developing the business program.

General Business Conditions. The final basic consideration in business budgeting relates to the ebb and flow of general business conditions. It is not within the province of this book to discuss the causes for, or the methods of controlling, the business cycle; however, there seems little doubt that intelligent planning on the part of business executives generally would contribute largely toward a leveling of the peaks and valleys of business activity. Particularly would this result from careful planning for capital expenditures of a long-term nature. However true this may be, the business executive is faced with conditions as they are and he has learned from experience, often bitter, that there is a rise and fall in the tide of business, that the changes come without exact regularity in point of time or severity, and that he must be alert to catch such signals of these movements as have been developed. While such signals may not be highly perfected, it is foolhardy to reject such as do exist.

An attempt to foresee the trend of general conditions is particularly important where plans must be laid looking far into the future, where the industry is in a stage of rapid growth, and where the ultimate consumer is far removed from the producer. Advice relative to the trend of business and the position of a particular industry or concern in the business cycle may be secured from commercial statistical agencies; or an individual company may develop its own forecasting facilities. The latter method is usually practical only in large concerns. In a company which undertakes its own forecasting, the responsibility may rest with a business economist or it may be assigned to the controller's department. In the latter case, the controller must attempt to find business indices which shed light upon the future trend of business in his own industry and firm. Final judgment as to the future trend should come from the general executive group and not from the controller, but the latter may assume responsibility for collecting and presenting the data that are to serve as a basis for executive interpretation and judgment.

PART II

THE TECHNIQUE OF BUDGETING AND CONTROL

Chapter 4

AN OVER-ALL REVIEW OF THE BUSINESS PLAN

Budgeting vs. Forecasting. The terms "budgeting," "forecasting," and "budgetary control" have been used in the preceding three chapters of this book. Perhaps to the layman these terms are interchangeable—and certainly there is often confusion as to the meaning of these words. The professional manager or professional accountant should be able to distinguish between each. Business forecasting is the calculation of a *future* condition or the results of future action, based on the analysis of all known facts or probable future events which will influence it. It is a projection. Forecasting might be described as a formal guess as to the future.

On the other hand, business budgeting, as commonly understood, includes the forecasting of probable results for a given period or periods, the development of a business plan, the coordination of the various business functions, the control of the variations from the plan, and the necessary modification of the plan in order that the best obtainable results may be achieved. Thus, it can be seen that the word "budgeting" is a broader term than mere forecasting, and that it involves *action.* It is positive and not only predictive. "Budgeting" and "budgetary control" are generally used interchangeably.

Long-Term and Short-Term Forecasting. Before starting a somewhat more detailed review of the business plan, it is perhaps well to re-emphasize that financial planning is composed of two principal segments: (1) long-term forecasting and (2) short-term forecasting and planning. Both are necessary for sound and intelligent decisions by management. Both may be said to employ the same general principles. However, as the name implies, the long-term forecast covers a broader span of time—perhaps five years or more. Dealing so far into the future, it is necessarily less detailed and perhaps less accurate than the short-term forecast. The short-term forecast very often covers a period of only one year, and is quite minute in application. It is this forecast which serves as the basis of the budget. It is the starting point for determining *in detail* how the company must operate to attain its profit objective. The long-term forecast is generally viewed as a *planning* tool and less of a *control* tool.

The distinction between the two types of financial planning is made here to emphasize their inherent difference in objective and in time of preparation. Most of the succeeding discussion will relate to the short-term phases of business planning.

Types of Budgets. To state merely that a budget is a plan does not convey a great deal of understanding. It is a very general statement. Let us elaborate. A soundly conceived budgetary control system will include, first, a comprehensive or master budget. This, in turn, is composed of the separate budgets of its component parts. In practice, the three major constituents of a master budget are the:

1. Statement of Estimated Income and Expense.
2. Statement of Estimated Financial Condition.
3. Statement of Estimated Cash Receipts and Disbursements.

These three primary plans or forecasts are usually supported in a manufacturing company by the following detailed budgets:

1. Sales Budget.
2. Production Budget.
3. Materials or Inventory Budget.
4. Purchases Budget.
5. Labor Budget.
6. Manufacturing Expense Budget.
7. Cost of Goods Sold Budget.
8. Administrative and General Expense Budget.
9. Selling Expense Budget.
10. Advertising Budget.
11. Research and Development Expense Budget.
12. Other Income and Expense Budgets.
13. Capital Assets Budget.

Of course, if the company is a mercantile concern, then the purchasing budget takes the place of the various budgets related to production and production costs.

Each of these budgets is developed in considerable detail and for relatively short periods of time. Moreover, while the cooperation of the affected departments is fundamental, the bulk of the detailed calculations and presentation falls to the accounting group. Under the circumstances, the authors believe that the best way of understanding the budgetary procedure will be to review a simple and hypothetical case of budget preparation. This bird's-eye view will cover a span of one year without any details by periods. The method and the many complications involved in actual preparation will be ignored—those will come later. The objective is to give the reader an over-all view of the budget as it is being prepared, and to show clearly how the pieces of the jigsaw puzzle fit together.

The Sales Budget. Usually the sales forecast is the starting point in budget preparation. The Illustrative Company manufactures and sells only four products. Based on the estimate of units received from the sales manager, and the expected unit prices, the sales budget is constructed as shown in Figure 2.

THE ILLUSTRATIVE COMPANY
PRELIMINARY SALES BUDGET
For the Year Ending December 31, 1956

Product	No. of Units	Unit Selling Price	Total Sales
R	20,000	$20.00	$ 400,000
S	30,000	30.00	900,000
T	50,000	15.00	750,000
U	5,000	50.00	250,000
Total ..	105,000		$2,300,000

FIGURE 2. Sales Budget

The Production Budget. Once the tentative estimate of sales has been agreed upon, the usual next step is a determination of the quantities of finished goods which must be produced to meet both the sales and inventory requirements. This calculation of units to be produced is illustrated in Figure 3.

THE ILLUSTRATIVE COMPANY
TENTATIVE PRODUCTION BUDGET
For the Year Ending December 31, 1956

Description	Products			
	R	S	T	U
Quantity Required for Sale	20,000	30,000	50,000	5,000
Desired Ending Inventory	5,000	5,000	10,000	500
Total Requirements	25,000	35,000	60,000	5,500
Less:				
Beginning Inventory	3,000	2,000	8,000	1,000
Required Production	22,000	33,000	52,000	4,500

FIGURE 3. Production Budget

The Purchases Budget. After the levels of production have been set, the next job to be undertaken is the sometimes laborious task of determining the quantities of raw material needed to meet the production and inventory requirements. This function is, first, a matter of extending the units of production times the units of each raw material needed:

Computation of Units of Raw Material

Raw Material	Finished Product R	S	T	U	Total Unit Requirements
AA	11,000	33,000	–	9,000	53,000
BB	22,000	–	52,000	9,000	83,000
CC	11,000	66,000	104,000	4,500	185,500

Then, after *usage* has been calculated, the value of purchases can be set, giving consideration to inventories. The dollar value is determined on the basis of expected unit cost prices which may be furnished by the purchasing department. The purchases budget is constructed basically in the manner of Figure 4.

THE ILLUSTRATIVE COMPANY
TENTATIVE PURCHASES BUDGET

For the Year Ending December 31, 1956

Raw Material	Requirements Production	Ending Inventory	Total	Less: Beginning Inventory	Quantity to Be Purchased	Unit Price	Purchases Budget
AA ...	53,000	2,000	55,000	3,000	52,000	$4.00	$208,000
BB	83,000	5,000	88,000	10,000	78,000	2.00	156,000
CC	185,500	20,000	205,500	20,000	185,500	1.00	185,500
Total							$549,500

Figure 4. Purchases Budget

The Direct Labor Budget. Another budget which is dependent upon the production budget is that relating to direct labor. This cost is computed as shown in Figure 5.

THE ILLUSTRATIVE COMPANY
TENTATIVE DIRECT LABOR BUDGET

For the Year Ending December 31, 1956

Product	Quantity	Standard Labor Hours Per Unit	Total Standard Labor Hours	Direct Labor Budget (At $2.00 per Std. Labor Hour)
R	22,000	1.0	22,000	$ 44,000
S	33,000	2.5	82,500	165,000
T	52,000	.5	26,000	52,000
U	4,500	2.5	11,250	22,500
Total			141,750	$283,500

FIGURE 5. Direct Labor Budget

The Manufacturing Expense Budget. Total manufacturing expenses for the expected production level must be ascertained on the basis of the activity of each type of expense and/or each department or cost center. The final estimate, arbitrarily assumed to be 100% of direct labor, is summarized in Figure 6.

THE ILLUSTRATIVE COMPANY
TENTATIVE BUDGET OF MANUFACTURING EXPENSES

For the Year Ending December 31, 1956

Description	Amount
Indirect Labor	$ 50,000
Payroll Taxes and Insurance	26,400
Provision for Vacation Wages	60,000
Power	37,500
Supplies	19,800
Repairs and Maintenance	43,500
Depreciation	39,300
Property Taxes	4,000
Property Insurance	3,000
Total	$283,500

FIGURE 6. Budget of Manufacturing Expenses

The Inventory Budget. All information necessary to calculate the investment in inventories is now available. The value of the finished inventory would be computed as demonstrated in Figure 7.

THE ILLUSTRATIVE COMPANY
COMPUTATION OF ESTIMATED INVENTORY OF FINISHED GOODS
As of December 31, 1956

Product	Quantity	Unit Price	Amount
R	5,000	$8.50	$ 42,500
S	5,000	16.00	80,000
T	10,000	6.00	60,000
U	500	23.00	11,500
Total			$194,000

FIGURE 7. Computation of Finished Goods Inventory

A similar procedure would be followed with respect to raw materials, supplies, and work in process. The total value of inventories might then be summarized as in Figure 8.

THE ILLUSTRATIVE COMPANY
STATEMENT OF ESTIMATED INVENTORIES
As of December 31, 1956

Raw Materials	$ 38,000
Supplies and Parts	4,000
Work in Process	60,000
Finished Goods	194,000
Total	$296,000

FIGURE 8. The Inventory Budget

Operating Expenses. Through detailed analysis and summary by individual departments, the other expenses of the business are estimated. They are summarized in Figure 9.

THE ILLUSTRATIVE COMPANY

STATEMENT OF BUDGETED OPERATING EXPENSES

For the Year Ending December 31, 1956

Item	Selling Expense	General and Administrative Expense	Financial Expense
Salaries—Executive	$ 24,000	$30,000	$ –
Salaries—Salesmen	145,000	–	–
Commissions—Agents	17,500	–	–
Advertising Space	20,000	–	–
Bad Debts	–	10,000	–
Traveling Expense	120,000	2,500	–
Rent	12,000	3,000	–
Supplies	4,000	7,000	–
Interest Expense	–	–	1,900
Discount on Sales	–	–	18,000
Total	$342,500	$52,500	$19,900

FIGURE 9. Budgeted Operating and Other Expenses

It is assumed that the only item of nonoperating income is discount on purchases, estimated to be $5,000.

Budget for Capital Expenditures. Based on a detailed review of facility requirements, a budget for capital expenditures is prepared as in Figure 10.

THE ILLUSTRATIVE COMPANY

BUDGET FOR CAPITAL EXPENDITURES

For the Year Ending December 31, 1956

Buildings	$20,000
Machinery and Equipment	32,500
Total	$52,500

FIGURE 10. Budget of Capital Expenditures

Cost of Goods Sold. The requisite information is now available to prepare a tentative statement of income and expense. First, of course, the statement of estimated cost of goods sold is computed. (See Figure 11.)

THE ILLUSTRATIVE COMPANY
STATEMENT OF ESTIMATED COST OF GOODS SOLD
For the Year Ending December 31, 1956

Raw Materials	
Inventory, January 1, 1956	$ 52,000
Add: Purchases (Figure 4)	549,500
Total Available	$ 601,500
Less: Inventory, December 31, 1956	38,000
Transfer to Work in Process	$ 563,500
Direct Labor (Figure 5)	283,500
Manufacturing Expense (Figure 6)	283,500
Total Charges to Cost of Production	$1,130,500
Add: Work in Process, December 31, 1955	60,000
Total	$1,190,500
Less: Work in Process, December 31, 1956	60,000
Transfer to Finished Goods	$1,130,500
Add: Finished Goods Inventory, January 1, 1956	128,500
Total	$1,259,000
Less: Finished Goods Inventory, December 31, 1956 (Figure 7)	194,000
Estimated Cost of Goods Sold	$1,065,000

Figure 11. Statement of Estimated Cost of Goods Sold

Statement of Estimated Income and Expense. The next logical step is the preparation of the statement of estimated income and expense. (See Figure 12.)

In practice, of course, the statement of estimated income and expense might be detailed by product lines, by territories, or by channels of distribution. Also, other significant relationships would be calculated for discussion purposes.

The Cash Budget. Another important budget statement relates to estimated cash receipts and disbursements. The summary of the *cash* transactions for the year is shown in the tabulation of Figure 13.

THE ILLUSTRATIVE COMPANY
STATEMENT OF ESTIMATED INCOME AND EXPENSE
For the Year Ending December 31, 1956

	Amount	% Net Sales
Net Sales (Figure 2)	$2,300,000	100.00
Cost of Goods Sold (Figure 11)	1,065,000	46.30
Gross Profit	$1,235,000	53.70
Operating Expenses:		
Advertising and Selling (Figure 9)	$ 342,500	14.89
General and Administrative (Figure 9)	52,500	2.28
Total Operating Expenses	$ 395,000	17.17
Operating Profit	$ 840,000	36.53
Other Income—Discount on Purchases	5,000	.21
	$ 845,000	36.74
Other Expenses:		
Interest Expense (Figure 9)	$ 1,900	.09
Discount on Sales (Figure 9)	18,000	.78
	$ 19,900	.87
Profit Before Federal Income Taxes	$ 825,100	35.87
Federal Income Taxes	412,550	17.94
Net Income	$ 412,550	17.93

FIGURE 12. Statement of Estimated Income and Expense

THE ILLUSTRATIVE COMPANY
STATEMENT OF ESTIMATED CASH RECEIPTS AND DISBURSEMENTS
For the Year Ending December 31, 1956

Cash balance, December 31, 1955		$ 460,000
Estimated Cash Receipts:		
Collections on Accounts Receivable	$2,110,000	
Proceeds from Sale of Common Stock	500,000	
Proceeds from Notes Payable	50,000	
Total Estimated Receipts		2,660,000
Total Cash Available		$3,120,000
Estimated Cash Disbursements:		
Accounts Payable—Materials and Supplies	$ 575,300	
Accounts Payable—Other	267,500	
Notes Payable	300,000	
Salaries and Wages	592,500	
Federal Income Taxes	370,400	
Taxes—Other	28,000	
Interest Expense	1,900	
Dividends	150,000	
Capital Assets	52,500	
Total Estimated Disbursements		2,338,100
Estimated Cash Balance, December 31, 1956		$ 781,900

FIGURE 13. Statement of Estimated Cash Receipts and Disbursements

THE ILLUSTRATIVE COMPANY COMPARATIVE

Actual as of December 31, 1955, and

ASSETS

	Actual December 31, 1955		Estimated December 31, 1956		Increase or (Decrease)
CURRENT ASSETS					
Cash		$ 460,000		$ 781,900	$321,900
Accounts Receivable ..	$ 250,000		$ 417,000		
Less: Reserve for Doubtful Accounts	15,000	235,000	20,000	397,000	162,000
Inventories:					
Raw material	$ 52,000		$ 38,000		
Supplies	4,000		4,000		
Work in Process ...	60,000		60,000		
Finished Goods	128,500	244,500	194,000	296,000	51,500
Prepayments		3,000		3,000	–
Total Current Assets		$ 942,500		$1,477,900	$535,400
FIXED ASSETS					
Land and Land Improvements	$ 25,000		$ 25,000		
Buildings	375,000		395,000		
Machinery and Equipment	625,000		657,500		
Total	$1,025,000		$1,077,500		
Less: Reserves for Depreciation	210,000	815,000	249,300	828,200	13,200
TOTAL ASSETS		$1,757,500		$2,306,100	$548,600

FIGURE 14. Comparative Statement

Statement of Estimated Financial Condition. The final effect of all the planning is reflected in the statement of estimated financial condition at the close of the budget period. Usually such a statement is prepared in comparative form with the actual or expected condition at the beginning of the budget period as well as at the close. The concluding budget statement and the related statement of retained earnings are illustrated in Figures 14 and 15.

STATEMENT OF FINANCIAL CONDITION

Estimated as of December 31, 1956

LIABILITIES

	Actual December 31, 1955	Estimated December 31, 1956	Increase or (Decrease)
CURRENT LIABILITIES			
Federal Income Tax Accrual	$370,400	$ 412,550	$ 42,150
Accounts Payable	60,000	53,900	(6,100)
Notes Payable	300,000	50,000	(250,000)
Accrued Salaries and Wages	30,000	30,000	–
Accrued Taxes—Other	28,000	28,000	–
Total Current Liabilities	$788,400	$ 574,450	$(213,950)
OWNERSHIP EQUITY			
Common Stock, $5 Par Value, Authorized 100,000 Shares; Outstanding, 50,000 Shares in 1955, & 70,000 in 1956	$250,000	$ 350,000	$ 100,000
Capital Contributed for Common Stock in Excess of Par Value..	500,000	900,000	400,000
Retained Earnings	219,100	481,650	262,550
Total Ownership Equity	$969,100	$1,731,650	$ 762,550
TOTAL LIABILITIES	$1,757,500	$2,306,100	$ 548,600

of Financial Condition

THE ILLUSTRATIVE COMPANY
STATEMENT OF ESTIMATED RETAINED EARNINGS

As of December 31, 1956

Balance, December 31, 1955	$219,100
Add:	
Estimated Net Income for the Year 1956	412,550
Total	$631,650
Less:	
Dividends to Be Paid 1956	150,000
Estimated Balance, December 31, 1956	$481,650

FIGURE 15. Statement of Estimated Retained Earnings

Approval of the Budget. This comprehensive review of budget preparation has progressed from one step immediately to the next. In actual practice, the path is not as smooth or well-defined. Usually, after each of the detailed budgets is prepared by the accounting staff, the figures are compared with past experience and tested by checking significant relationships. Discussions are held with the functional supervisors or department heads to clarify or correct any seemingly out-of-line condition. Such a process can well require several revisions.

When agreement has been reached on the detail budgets, then the pieces are put together; the master budget is prepared. This over-all budget is presented to the president and/or budget committee for analysis and review. If the management is not satisfied with the operating results or the expected financial condition, or if these executives are not convinced that the best possible program is reflected in the plan, then the alternative plans must be introduced and expressed in monetary terms. When the principals are in accord, the budget for the coming period may be submitted for approval to the board of directors.

The Control Function. Up to the stage of top-side approval, the planning function has predominated. Presumably the best possible course of action was selected; and every member of the organization was assisting with the expression of such a plan. However, once the budget is approved, the business enters a new phase. The budget must be attained; the ship must be kept on course. So the budget becomes a control tool. For this purpose, actual operating results of the day, or week, or month are compared with the budget. Variances are analyzed, and corrective action is taken wherever necessary. Quite often, the strong winds force the ship off its course, so a new one must be charted; the plan or budget must be revised.

Chapter 5

FLEXIBILITY OR VARIABILITY OF THE BUDGET

Types of Budgets. Budgets may be classified into three principal types:

1. Appropriation
2. Fixed or forecast
3. Flexible or variable

The appropriation type budget, though common in governmental budgeting, has rather restricted usage in business. Essentially, a particular sum is established as the limit to be spent on a given activity, and is formalized by the board of directors through approval of an appropriation of this specified amount. Appropriation type budgets are sometimes used in connection with advertising expenses, or research and development expense.

Fixed or forecast type budgets involve a plan which is unchanging. As the sales or production volume varies with actual conditions, the standard of measurement is *not* changed.

A flexible budget, on the other hand, is one which permits revision of estimates of operating costs and profits with changes in the sales or production volume. It refines the static or fixed type of budget by adjusting for variations in the output rate.

Budgets of each type will be discussed later. However, the principle of variability is so fundamental that it should be understood before proceeding to a detailed review of the various incomes and expense elements. The principle of variability is the key to an effective budgetary control system.

Some Flexibility Required. A business program for the future must be predicated upon conditions which are *expected* to exist during the period under consideration. Since economic currents shift quickly as a result of changes in physical, political, and social forces, the future of business can never be certain. Therefore, in the planning and control of operations some consideration must be given to *unexpected* circumstances.

The degree of flexibility which should be injected into the program depends upon the particular purpose of budgeting which is given major emphasis. For some purposes little or no flexibility is desirable; for others a high degree of flexibility is required.

The basic purposes of budgeting, as previously stated, are:

1. To find the most profitable direction which the operations can take.
2. To develop in detail a balanced and coordinated program in that direction.
3. To assist in controlling the operations in the execution of the program.

The degree of flexibility required in relation to each of these basic purposes is illustrated below.

Illustration of First Basic Purpose—Planning. As a simple illustration, assume that a concern has adopted the following program for the first quarter of the year.

SUMMARY BUDGET FOR QUARTER

Sales of 3,000 units at a price of $2 each	$6,000
Production of 3,000 units at a cost of $1.20 each	3,600
Selling and general costs amounting to 30% of sales	1,800
Profit amounting to 10% of sales	600

This is an extremely simplified expression of the accomplishment of the first basic purpose of budgeting. To be sure, such a program requires a vast amount of refinement, but the principle involved should be clear—a definite program has been set, which, all things considered, is believed to be the most profitable one which could be found.

Flexibility in Relationship to Planning. There can be only one best program and in so far as the work of budgeting is done to find this program, there would seem to be no need of flexibility in the plans. Indeed, it would seem that there should be no flexibility, that the program should be rigidly followed. Actually, however, the program is predicated upon so many uncertain factors that alternative plans may be given consideration for use in case external conditions or internal operations do not develop as expected.

In the illustration at hand, for example, the program calls for the expenditure of $3,600 for manufacturing costs and $1,800 for selling and general costs; however, if the orders do not develop at such a rate as to provide the 3,000 units of sales, some timely revision of the program will be necessary. Less units may be produced and the expenditures for labor and material may be reduced accordingly. Also, expenditures for selling and general costs may be adjusted.

The program cannot always be entirely rigid and inflexible. There will usually be some "ifs" connected with it. Indeed, it may be *expressed* to a certain extent in flexible terms. For example, the production department may be told that the program calls for 3,000 units which will require 1,500 labor hours. If, however, the volume of production is reduced, the relationship of 1 labor hour to 2 units of product should be maintained. Again, the allowance for supplies may be set at $150 but with the further provision that the quantity of supplies used should not exceed $0.10 for each labor hour used.

Hence, it should be apparent that a certain degree of flexibility may be necessary (*a*) in the sense that provision should be made for a revised program when conditions do not permit the developments as expected, and (*b*) in the method of presenting the plan so as to facilitate changes when necessary for the other purposes which budgeting serves.

Illustration of Second Basic Purpose—Coordination. To continue the illustration, it may be assumed next that all executives, major and minor, have been given full details of their respective parts in the program, definite methods of execution, definite time schedules of performance, and the detailed components constituting their costs (it being understood that such executives have had a full share in the development of their respective parts in the program). These details are assumed to be as follows:

SALES VOLUME

	Units	Dollars
January	1,000	$2,000
February	800	1,600
March	1,200	2,400
Total	3,000	$6,000

PRODUCTION VOLUME

	Units
January	800
February	1,000
March	1,200
Total	3,000

It will be noted that the number of units to be produced in the respective months varies from those to be sold. This is the usual situation, the variation being reflected in the inventories. While sales and production cannot always be expressed in uniform units, they are so expressed here for the sake of simplicity. The situation in which they cannot be so expressed is discussed later.

Production Costs. For the sake of simplicity, it will be assumed that there are no production costs other than the following:

		Costs			
Month	Production Volume in Units	Direct Labor and Material	Fixed Property Taxes	Supervision	Total Production Costs
January	800	$ 640	$100	$280	$1,020
February	1,000	800	100	300	1,200
March	1,200	960	100	320	1,380
Total	3,000	$2,400	$300	$900	$3,600

It will be noted here that three types of production costs are illustrated. Direct labor and material may be taken as representing those costs which vary in direct ratio to the physical volume of production. These will be designated as *variable* costs. Fixed property taxes may be taken as representing those costs which are entirely fixed, regardless of physical volume, at least within certain limits. These will be designated as *fixed* costs. Supervision may be taken as representing those costs which vary with physical volume but not in direct ratio to physical volume. These will be designated as *semivariable* costs. Thus, in January, with a production of 800 units, the direct labor and material is 80 cents per unit, taxes are a fixed amount of $100, and supervision is $280 or 35 cents per unit; in February, with a production of 1,000 units, the direct labor and material cost is still 80 cents per unit, taxes are $100, and supervision is $300 or 30 cents per unit. With an increase in volume from 800 to 1,000 units, or 25%, supervision has increased from $280 to $300, or only 7.14%. Likewise in March, with an increase in volume of 20% over February, supervision increases only $20 or 6.67%.

The determination of what the variable and fixed production costs should be for different physical volumes is comparatively simple. The methods of determining what the semivariable production costs should be is discussed later. For the moment it may be assumed that a satisfactory way has been found to predetermine the semivariable costs and that they will be as shown above.

Selling and General Costs. For the sake of simplicity, it will be assumed that there are no selling and general costs other than the following:

		Costs				
Month	Sales Volume in Dollars	Sales Commissions	Rent	Sales Salaries	Acc'tg Dept. Salaries	Total Selling and Gen'l Costs
January	$2,000	$200	$100	$200	$100	$ 600
February	1,600	160	100	190	90	540
March	2,400	240	100	210	110	660
Total	$6,000	$600	$300	$600	$300	$1,800

It will be noted again that the three types of costs are illustrated—variable, fixed, and semivariable. The variability here, however, relates to sales rather than production volume. Sales commissions are 100% variable and amount to 10% of sales at each volume level. Rent is fixed regardless of the volume of sales. (Rent in this instance pertains to sales facilities.) Sales salaries vary with sales volume but not in direct ratio thereto. Accounting department salaries may be taken as representing semivariable administrative and general costs. These may be affected by either production or sales volume but they are assumed here to relate more closely to sales volume. It should be noted also that the degree of variability differs as between sales salaries and accounting department salaries. For example, in February, the sales volume is 20% less than in January, whereas sales salaries are 5% less while accounting department salaries are 10% less. This is to illustrate the fact that the degree of variability may differ with different semivariable costs—whether production, sales, or general.

The foregoing illustration indicates the accomplishment of the second basic purpose of planning—that is, the development in detail of a unified, balanced, and properly coordinated program.

Flexibility in Relation to Coordination. It will be noted that the above detailed program is a definite one. The production department is told to proceed with the expenditure of $3,600, of which $1,020 is to be made in January; and with the production of 3,000 units, of which 800 are to be made in January. Moreover, these expenditures are broken down into their component parts. January expenditures for direct material and labor are to be $640, supervision $280, and so on. Likewise, the sales department is told to proceed with a program of $1,200 for direct sales effort (sales commissions of $600 and sales salaries of $600) in an effort to secure a sales volume of $6,000. Expenditure for direct sales effort in January is to be $400 in an effort to develop a sales volume of $2,000.

Such programs must be definite if the full coordinated power of the organization is to be applied. It is usually ineffective to say to the production department that *if* the sales department develops sales of $6,000, then 3,000 units should be produced. By the time the sales are known, it will be too late to make the production plans. It is in reality necessary to say that the sales plans are such that they call for a production program of 800 units in January, 1,000 units in February, and 1,200 units in March, and that production plans should be made accordingly. Contracts should be made for materials, a labor force should be acquired, and plant facilities should be ready for the expected production. If it develops later that the sales plans miscarry, then adjustments to the production program will have to be made as quickly and effectively as possible. In the meantime, the production department should apply full power toward the program as planned.

Likewise, it would be equally ineffective to say to the sales department that *if* the production department maintains a production schedule of 3,000 units, then sales effort should be applied toward securing a sales volume of $6,000.

This serves to emphasize the point that the initial program must be definite in so far as it serves as a basis for coordinated departmental action. On the other hand, the operations must be closely watched and as variances from the original program occur in one department or in particular operations, revisions must be made in other departments and operations. To a certain extent such plans may be self-revising. For example, as sales operations proceed, it may develop that they are running 10% above or below the expectations. This may automatically signal other departments to enlarge or curtail their operations by corresponding, though not necessarily identical, degrees. Since programs are seldom executed exactly as planned, such flexibility is necessary.

Illustration of Third Basic Purpose—Control. To achieve this necessary coordination and to permit those responsible for the program to make the required adjustment to the revised activity level, it is essential that (*a*) the costs be properly segregated by their behavior in relationship to volume, and (*b*) that such costs be *expressed* in relationship to the unit of variability.

To continue the illustration, it may be assumed next that the actual operations for January result as follows:

Sales of 800 units at a price of $2 each		$1,600
Production of 720 units at the following costs:		
Direct labor and material	$630	
Taxes	100	
Supervision	270	
Total production costs		$1,000

Selling and general costs:		
Sales commissions	$160	
Rent	110	
Sales salaries	190	
Accounting department salaries	90	
Total selling and general costs		$ 550

These figures show a wide variance from the original program for January. The comparison may be shown as follows:

			Increase (Decrease)	
	Program	Actual	Amount	Per Cent
Production (units)	800	720	(80)	(10.00)
Production costs:				
Direct labor and material	$ 640	$ 630	($ 10)	(1.56)
Taxes	100	100	None	
Supervision	280	270	(10)	(3.57)
Total production costs	$1,020	$1,000	($ 20)	(1.96)
Sales	$2,000	$1,600	($400)	(20.00)
Selling and general costs:				
Sales commissions	$ 200	$ 160	($40)	(20.00)
Rent	100	110	10	10.00
Sales salaries	200	190	(10)	(5.00)
Accounting department salaries	100	90	(10)	(10.00)
Total selling and general costs	$ 600	$ 550	($50)	(8.33)

Production volume is 10% below the original program and sales volume is 20% below. Costs, however, have not been reduced in proportion to volume. Production costs have been reduced only 1.96%, and selling and general costs only 8.33%. This situation should serve to illustrate three points:

1. That costs do not, as a rule, rise and fall in direct ratio to changes in volume. This is due to the fact that fixed costs remain the same regardless of volume; and that semivariable costs, while increasing or decreasing with volume, do not change in direct ratio thereto.
2. That changes in costs are the result of two major factors (eliminating price factors)—namely, volume and operating efficiency.
3. That, in any comparison of actual results with estimates, allowance must be made for the effect of the volume factor before any conclusions can be drawn relative to operating efficiency.

In the case at hand, the question naturally arises as to whether or not the production department should have reduced its costs more than

1.96% when production volume was being reduced by 10%. It is not to be expected that costs could be reduced 10%, but the question still remains as to how much reduction should have been effected. This principle applies to all divisions of the business and to all departments and sections whose general efficiency is subject to measurement.

It is seldom, indeed, that the volume will be exactly as planned; hence, it is seldom that costs as planned can be compared with actual costs for the purpose of indicating operating efficiency. In this case, supervision cost was planned at $280 for a volume of 800 units. If the volume had been 800 units in January, then the actual supervision cost could be compared with the estimate of $280 as a signal of operating efficiency. With an actual volume of 720 units, the facts are not at hand as to what the supervision cost should be.

To the extent, then, that the budget is to serve for the purpose of controlling operations, and particularly for the purpose of controlling costs, it must show what the costs should be at various levels of production and sales volume. *This is the primary reason for injecting flexibility into the budget.*

To continue the illustration, it may be assumed in this case that the drop in sales of 20% below the expected amount has been caused by unexpected developments in the industry to which the concern sells a major part of its product. These could not be foreseen. Production was checked as rapidly as possible but the total reduction amounted to only 10%. The question now is, Were operating costs reduced to the extent they should have been in January and, assuming that such conditions are now expected to prevail throughout February and March, what reductions in operating costs should be planned for those months in order to bring them in line with the 20% decrease in volume over the original plans?

The various types of costs may be considered in detail as follows:

PRODUCTION COSTS

Variable

Since the physical volume of production was cut 10%, the variable production costs, represented by direct labor and material, should have been cut 10% or $64. Actually, these costs were cut only 1.56% or $10; hence, this provides a signal of production inefficiency amounting to $54.

Fixed

The fixed costs, as represented by taxes, were the same as planned.

Semivariable

The method of determining what the semivariable costs should be at different volume levels is discussed later. It may be assumed here that the semivariable production costs, as represented by supervision, should have been only $260 at a volume of 720 units. Since these costs were actually $270, they were $10 or 3.85% ($10 ÷ $260) higher than should have been the case. Here again is a signal of production inefficiency.

SELLING AND GENERAL COSTS

Variable

Since the sales volume was reduced 20%, the variable selling and general costs, as represented by sales commissions, should have been cut 20%, or from $200 to $160. Since these costs were exactly $160, the results in this respect appear satisfactory.

Fixed

The fixed selling and general costs, as represented by rent, are $10 more than the amount estimated. This suggests either an error in the preparation of the budget or a change in circumstances which could not have been foreseen, and calls for investigation.

Semivariable

It may be assumed that the semivariable selling and general costs, for a volume of $1,600, should be:

Sales salaries	$180
Accounting department salaries	90

It is apparent from these figures that the actual sales salaries were $10 more than they should have been even for a volume of $1,600. Here again there is a signal of inefficiency. Accounting department salaries, while not reduced proportionately, were in line with the reduced volume.

The foregoing analysis presents a simplified illustration of the use of the budget for the accomplishment of its third basic purpose; that is, the control of operations and costs.

Flexibility in Relationship to Control. It was stated in Chapter 2 that the budget figures do not serve in their entirety as measures of performances. The figures must, first of all, express actual expectation—good or bad—but in a very large measure such expectation is based upon satisfactory performance. Particularly is this true in regard to controllable costs of distribution and production. The budget therefore serves as an important tool of control. *Such control is pos-*

sible only if the budget reveals what the costs should be at various volume levels. The need for such flexibility is apparent from the comparisons for January (continuing the illustration as above):

SALES AND PRODUCTION VOLUME

	Original Program	Actual Operations in Jan.	Per Cent Decrease
Sales volume	$2,000	$1,600	20
Production volume (units)	800	720	10

COSTS

	Budgeted Costs for Original Program	Budgeted Costs for Actual Volume	Actual Costs at Actual Volume	Variance Between Budgeted Costs and Actual Costs at Actual Volume
Production costs:				
Variable	$ 640	$576	$ 630	$54
Fixed	100	100	100	None
Semivariable	280	260	270	10
Total production costs	$1,020	$936	$1,000	$64
Selling and general costs:				
Variable	$ 200	$160	$ 160	None
Fixed	100	100	110	$10
Semivariable	300	270	280	10
Total selling and general costs	$ 600	$530	$ 550	$20

The figures in the last column of the above comparison signal the following facts:

The production department is failing to keep its variable and semivariable costs in line with volume.

The sales and administrative departments are keeping their variable but not their semivariable costs in line with volume.

The fixed selling and general costs are in excess of those planned and should be investigated.

It should be apparent that such information would not be available unless it were known what the costs should be at the actual production and sales volumes for January.

If the actual variable production cost ($630) is compared with the amount originally budgeted ($640), it shows a decrease of $10. That is, the production department used less direct labor and material than the original program called for. At first thought, this might appear to indicate favorable operation. Actually, the production department used $54 more than was justified.

The figures presented are extremely simple and are intended only to illustrate the principle involved. Once this is understood, there is no particular difficulty in the refinement of the process. It is also assumed throughout the foregoing illustrations that factors other than volume and operating efficiency remain approximately the same. Other factors which may influence the situation are changes in price, type of goods made and sold, and methods of production, selling, and financing. When such changes come quickly enough to alter the relationships, adjustments must be made to give effect to the changes or the entire budget figures must be revised.

Costs in Relationship to Volume. At this point the application of, and need for, flexibility in the budget is presumed to be understood. The next question is one of technique. Just how are costs segregated into their elements, e.g., fixed costs, variable costs, and semivariable costs?

The undertaking of any such determination in a business organization requires first of all an understanding of the various processes and functions in the business. With such a background, a review of the cost history and the application of good common sense will help to establish the cost behavior pattern.

The steps in the process may be outlined as follows:

1. A general review of costs by type of item, by department, and in total.
2. The selection of the activity measure or factor of variability for each function and/or cost.
3. The review of costs in relationship to the measure of activity, and determination of the cost segments and rate of variability, if applicable.

In classifying costs into the variable, fixed, and semivariable segments, such classification should be made within restricted volume ranges. For example, if the sales volume is not more than $1,500,000 nor less than $1,000,000, certain costs will be fixed. The same costs might increase, however, were the volume to be extended beyond $1,500,000. As a rule, the volume ranges under consideration in any one budget period are sufficiently restricted as to occasion no difficulty in setting such limits.

While few costs are entirely fixed or 100% variable within a given volume range, a considerable number are so nearly so that they can, for all practical purposes, be thus classified. All others must be assigned to the semivariable group.

As a general statement, fixed costs occasion no difficulty as they will be the same at each level of volume under consideration. Illustrative of fixed costs are bond interest, property taxes on plant and equipment, depreciation charged on a time basis, fixed executive salaries, rent, etc.

Variable Costs and Measures of Activity. As the name implies, variable costs are those which vary in direct ratio to volume. This volume factor may be any one of several measures discussed in this section. Some illustrative variable costs under certain conditions are direct material, direct labor on a piece rate basis, salesmen's or agents' commissions.

The selection of the proper measure of activity is an important step in assuring an effective budgetary control system. The requirements of an acceptable base are perhaps four in number:

1. It should be a direct measure of the cost-incurring activity.
2. It must be readily understood by those using the budget.
3. It must be generally unaffected by any factor other than volume.
4. It should be sufficiently sensitive to changes in activity, and be generally applicable to all products of the company.

The bases which seem plausible should be carefully studied in their application to the various departments, whether a sales activity, a direct production function, or a service.

Suggestive of acceptable bases are these popular applications:

1. Standard man-hours.
2. Standard machine hours.
3. Sales volume.
4. Actual man-hours.
5. Direct labor dollars.
6. Pounds of material consumed.
7. Units of out-put—finished product.
8. Number of orders filled.
9. Number of deliveries.

Many different measurements of volume must be used for the various functions and operations of the business. The characteristics of the industry or activity will determine the bases, and special volume factors often must be used. For example, in hotels, the percentage of room occupancy is used; in office buildings, the floor-space occupancy; and in parking garages, the units handled.

The measures of activity selected for the variable costs very often will be applicable to the semivariable costs.

The Semivariable Costs. Semivariable costs are those which vary with volume but do not vary in *direct* relationship to the volume changes. It is with this group that the chief difficulty arises in determining what the costs should be at different volume levels. As in the case of the variable costs, these items must first be classified according to their relationship to various production and sales volume factors. Next, some methods must be found for determining what the relationship is between these cost items and the respective volume factors to which they are related.

There are at least three methods available for determining the expected cost at different volume levels:

1. Direct estimate or synthesis of the semivariable costs.
2. Calculation of fixed and variable elements of costs, based on the minimum and maximum expected volume.
3. Graphic determination of fixed and variable costs.

Direct Estimate of Semivariable Costs. One method of budgeting the semivariable costs for different volume levels is to make individual estimates and calculations of every semivariable cost item at each of several volume levels falling within the range of volume expectancy. The steps involved are:

1. Measurement factors of production or sales volume are selected for the cost items under consideration.
2. Maximum and minimum limits of volume expectancy are established.
3. Various production or sales volume levels or brackets are established within the range of volume expectancy as a basis for the cost estimates.
4. Estimates and calculations are made for each cost item for each of the volume levels or brackets.

To illustrate this procedure attention is again directed to the illustration above. It may be assumed that production volume for one month is not expected to be less than 600 units or more than 1,200 units and that sales are not expected to be less than $1,200 or more than $2,400. Here the measure of production volume is physical units and the measure of sales volume is dollar sales. It may be further assumed that it is desirable to know what costs should be expected at each of the following volume levels:

Production Volume in Units	Sales Volume in Dollars
600	$1,200
800	1,600
1,000	2,000
1,200	2,400

As in the above illustration, it is further assumed that the semivariable costs relating to production volume include only supervision and those relating to sales volume include only sales salaries and accounting department salaries. The next step is to determine the amount of each of these semivariable costs which is justified at each volume level. Such calculations must be based upon estimates made by the various executives concerned. Once the calculations are made, they need not be changed until there is some change in conditions or circumstances affecting the cost items.

It may be assumed in this case that the estimates and calculations indicate that the semivariable costs should be as follows:

SEMIVARIABLE COSTS

Relating to Production Volume		Relating to Sales Volume			
Production Volume in Units	Supervision Cost	Sales Volume in Dollars	Sales Salaries	Acc'tg Dept. Salaries	Total
600	$245	$1,200	$160	$ 80	$240
800	280	1,600	190	90	280
1,000	300	2,000	200	100	300
1,200	320	2,400	220	110	330

This procedure is the same regardless of the factors used for volume measurement. If direct labor hours were used for production volume, then the estimates and calculations of supervision would be made for different numbers of direct labor hours. Different measures can be used in different departments and for different operations; for example, labor hours can be used in some departments while machine hours are used in other departments.

One objection to this method is that it does not indicate what costs should be expected at every volume point but only at certain points established as a basis for calculation. For example, in the illustration at hand, the production volume in January was actually 720 units. What should the supervision cost have been? In the figures above, it is shown that a supervision cost of $245 may be expected at a volume of 600 units and $280 at a volume of 800 units, but no cost is shown for 720 units. Between the established points, costs can be determined by interpolation. In this case the calculation would be as follows:

$$\left(\frac{\$280 - \$245}{800 - 600}\right) \times (720 - 600) + \$245 = \text{Expected cost at 720 units or } \$266$$

Another method is to make calculations for a sufficient number of volume levels so that any actual volume would be closely approximated by one of the calculations. This plan is illustrated in Figure 16. In this example, expenses were calculated for selected volumes ranging from 51,000 standard labor hours (60% of normal activity) to 110,500 standard labor hours (130% of normal activity). It is to be noted that the salaries of general foremen, depreciation, property taxes, and insurance—all fixed expenses in this case—were included in calculating the cost levels at the specified volumes. This chart was prepared for one production department; similar charts are prepared for all other departments. Costs at actual production levels are compared with the nearest volume calculation on the chart.

This method would seem to involve a vast amount of calculation. It will be found in practice, however, that once a method of calculating individual cost items is established, much less work is involved than might appear. Moreover, it will be found that many semivariable costs will bear a similar relationship to volume changes and can be grouped for purposes of calculation.

Resolving Semivariable Costs into Fixed and Variable Elements. Another method of budgeting semivariable costs at different volume levels is based on the theory that every semivariable cost item consists of a fixed and variable element; that between certain volume limits a cost item can be separated into these two elements; that the fixed element remains the same between these two limits; and that the variable element bears a constant relationship to volume between the two limits.

Under this method an estimate is made of each semivariable cost at the maximum and minimum volume levels expected. A calculation is then made of the fixed and variable elements of these costs and the two are separated. By this procedure it is then possible to ascertain the cost justified at any volume level lying between the maximum and minimum volume limits.

Reverting to the previous figures, this method may be illustrated as follows:

COSTS RELATING TO PRODUCTION VOLUME

	Minimum	Maximum
Production volume limits	600 units	1,200 units
Estimated costs:		
Supervision	$245	$320

COSTS RELATING TO SALES VOLUME

	Minimum	Maximum
Sales volume limits	$1,200	$2,400
Estimated costs:		
Sales salaries	160	220
Accounting department salaries	80	110

The first problem is to find for each of these cost items (*a*) the percentage relationship between the variable portion and volume, and (*b*) the portion which is fixed. Taking supervision cost, for example, a difference of 600 units in volume makes a difference of $75 in supervision cost. This gives a variable relationship of 12.5% (75÷600), or 12.5 cents per unit. The fixed portion can be determined as follows:

	Minimum Volume	Maximum Volume
Total supervision cost	$245	$320
Variable portion of cost (12.5% of 600 and 1,200, respectively)	75	150
Fixed portion of cost	$170	$170

The variable percentage and the fixed portion of every semivariable cost item can be determined in this manner. For example, the calculations for the remaining costs in this illustration would be as follows:

	Variable Percentage	Fixed Portion of Cost
Sales salaries:		
$\frac{\$220 - \$160}{\$2,400 - \$1,200} =$	5.0	
\$160 — (5% of \$1,200) =		$100
Accounting department salaries:		
$\frac{\$110 - \$80}{\$2,400 - \$1,200} =$	2.5	
\$80 — (2.5% of \$1,200) =		50

Referring now to page 52, it will be seen that the actual volume for January consisted of production of 720 units and sales of $1,600. What costs should be expected at these volumes? These may be shown as follows:

Actual production volume	720 units
Actual sales volume	$1,600

Costs	Fixed Portion	Variable Portion %	Variable Portion Amount	Total Expected Cost	Actual Cost (See page 53)	Gain (Loss)
Supervision	$170	12.5	$90*	$260	$270	($10)
Sales salaries	100	5.0	80**	180	190	(10)
Accounting department salaries	50	2.5	40†	90	90	None

* 12.5% of 720 (or actual production volume) = $90.
** 5% of $1,600 (or actual sales volume) = $80.
† 2.5% of $1,600 (or actual sales volume) = $40.

THE CONSOLIDATED CORPORATION
AIRCRAFT DIVISION
Manufacturing Expense Budget

Department Subassembly
Department Head Ship

Year 1955
Normal Activity 85,000
Base Standard Labor Hours

	PER CENT OF NORMAL ACTIVITY							
Account	60%	70%	80%	90%	100% (N.A.)	110%	120%	130%
Salaries								
General Foremen	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700
Foremen	1,100	1,500	1,900	2,200	2,200	2,200	2,600	2,600
Clerks, etc.	700	700	950	950	950	950	950	1,200
Subtotal	$ 2,500	$ 2,900	$ 3,550	$ 3,850	$ 3,850	$ 3,850	$ 4,250	$ 4,500
Hourly Labor—Indirect	1,500	1,750	2,000	2,250	2,500	2,500	2,750	3,000
Fuel	350	400	430	470	510	530	570	620
Power	2,620	3,020	3,430	3,870	4,300	4,740	5,140	5,320
Water	210	220	230	240	250	260	270	280
Maintenance and Repairs	1,630	1,875	2,050	2,250	2,500	2,790	3,070	3,660
Supplies	270	315	360	405	450	495	540	585
Mule Expense	140	180	190	200	210	230	260	270
Traveling	70	70	100	100	100	100	120	120
Telephone and Telegraph	70	80	90	100	100	100	110	120
Cartons and Containers	150	175	200	225	250	275	300	325
Recreation and Welfare	30	40	50	50	50	60	60	60
Miscellaneous	120	130	150	160	175	190	200	210
Subtotal	$ 9,660	$11,155	$12,830	$14,170	$15,245	$16,120	$17,640	$19,070
Depreciation—Building	900	900	900	900	900	900	900	900
Depreciation—Machinery and Equipment	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Property Taxes	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Insurance	350	350	400	400	400	400	400	450
Total	$13,910	$15,405	$17,130	$18,470	$19,545	$20,420	$21,940	$23,420

FIGURE 16. Manufacturing Expense Budget at Selected Levels of Activity

By this method it can readily be determined what costs should be expected at any volume and such costs can then be compared with the actual costs to signal failure or success in adjusting costs to changes in volume. In this case the production department used $10 more supervision, or 3.86% ($10÷$260) more, then was justified by the production volume; the sales department used $10 more sales salaries, or 5.55% ($10÷$180) more, than was justified by the sales volume. The accounting department, on the other hand, kept its salaries in line with the changes in sales volume.

This method may be criticized in that it assumes a constant relationship between the variable element of the costs and volume, within the volume range under consideration; but the error is usually slight and not sufficient to affect the usefulness of the method.

It should be noted that this method can be applied to groups of costs as well as to individual cost items.

Graphic Determination of Fixed and Variable Costs. The use of only two or a few points—such as only minimum and maximum limits—to determine the fixed and variable cost segments is sometimes subject to a wider degree of error than may be desirable because only a limited number of activity levels are considered. If more accuracy is desired, another convenient approach is the use of a scatter chart. Assume, for illustrative purposes, that the following data on production control department costs are available, adjusted for wage differences and similar factors.

Month	Reference	Factory Standard Man-Hours	Total Departmental Costs
January	(1)	20,000	$6,100
February	(2)	16,000	5,300
March	(3)	13,000	4,700
April	(4)	14,000	4,900
May	(5)	17,000	5,200
June	(6)	19,000	6,000
July	(7)	21,000	6,200
August	(8)	23,000	6,300
September	(9)	25,000	6,800
October	(10)	22,000	6,100
November	(11)	18,000	5,900
December	(12)	19,000	5,800

These points are then plotted on a chart as shown in Figure 17, each point being numbered for reference purposes. The vertical axis represents the dollar costs, while the horizontal axis represents the factor of variability—standard man-hours in the illustration. After the points are plotted, a line of best fit may be drawn by inspection—drawn in such a manner that about one-half of the points are above it and the other half below. Any highly variant items should be disregarded. For a higher degree of refinement the method of least squares may be used instead of inspection.

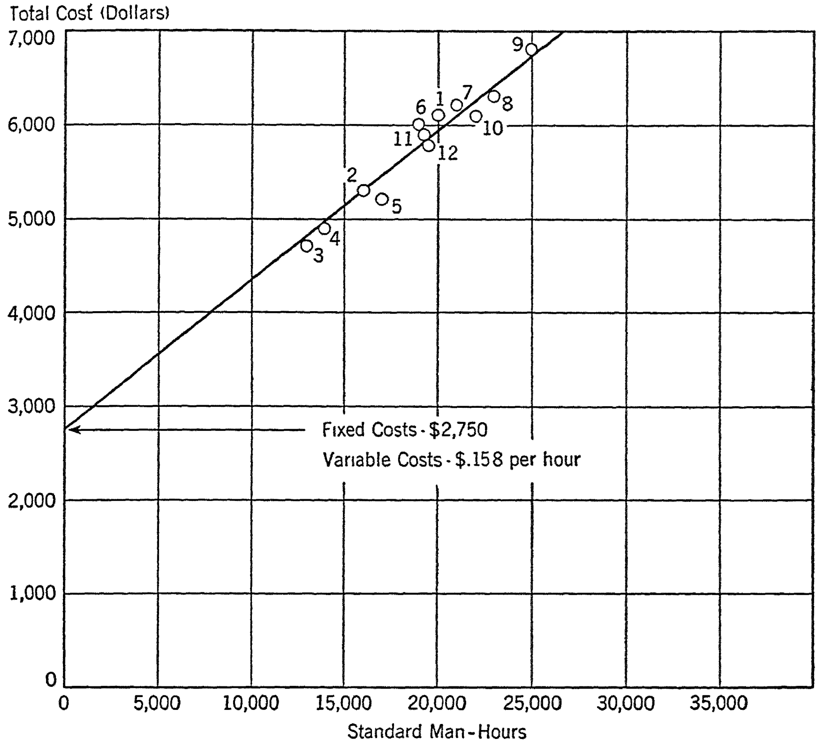

FIGURE 17. Graphic Determination of Fixed and Variable Costs

The point at which the line of best fit intersects the vertical axis indicates the fixed cost which might be expected if the plant were in an operating condition, but producing nothing. The total cost at any level of activity is determined by reading the chart. For example, at a level of 25,000 standard man-hours, the budgeted expense would be $6,700. This is made up of $2,750 fixed and $3,950 variable elements. The variable rate is $.158 per standard man-hour.

In reviewing the chart it can be seen that the slope of the line indicates the degree of variability. Thus a horizontal line would represent a fixed cost, whereas a line which goes through the point of origin indicates a completely variable cost. Sometimes in constructing a chart the points show no tendency to arrange themselves along a line. If this situation does exist, then either the control of costs has been absent or a poor choice has been made as to the factor of variability. Use of another factor should be tested to ascertain the cause. Incidentally, the chart may be used as a tool in illustrating the degree of success in controlling costs, the extent of accomplishment being measured by the closeness of actual expense to the line of budgeted expense.

Emphasis on Flexibility. The preceding discussion of the methods of classifying costs into fixed, variable, and semivariable have related to the normally expected costs. Oftentimes, however, extraordinary or unanticipated expenditures of a manufacturing expense nature must be made. These may fall well without the scope of the usual budget, even when the cumulative yearly condition is considered. In such instances, and if the expenditure is considered necessary and advisable, a special budget allowance may be made over and above the usual budget—something superimposed on the regular flexible budget structure.

It is to be emphasized that the important consideration is not necessarily *how* flexibility is introduced into the budget plan, but rather that it *is* made a part of the planning, coordinating, and control technique.

Procedure Must Be Extended to All Departments. In order to reveal clearly the principles involved, the illustrations in this chapter have been reduced to the simplest possible terms. Only a few cost items relating to production and sales have been considered. It should be emphasized, however, that the procedure must be extended throughout the full range of operations and to all departments and cost items involved. Many different measures of volume may be in use at the same time in different divisions or departments. Since volume does not necessarily run uniformly in different divisions, the maximum and minimum limits may differ in the various divisions. For example, the measures and volume limits for the purchasing department may be entirely different and independent of those applicable to the maintenance or accounting departments.

Costs Classified According to Executive Responsibility. All costs should be further classified according to executive responsibility. If, for example, it is found that the actual volume justifies the use of $100 of supplies in a certain production department but the supplies actually used amount to $125, then it must be possible to point the finger of responsibility definitely to the foreman or department head under whose jurisdiction the waste occurred.

This implies, on the other hand, that an executive will be held responsible for only those costs over which he has control. The analysis of costs for control purposes must be made independently of any accounting method used in the distribution of burden or overhead. The control of power costs, for example, must be directed toward the executives responsible for power production in so far as the cost per unit of power is concerned, but the foremen or department heads of the production and service departments which consume the power must be held responsible for the number of units consumed.

Such procedure frequently necessitates two entirely independent analyses of cost items, one for cost accounting purposes and one for cost control purposes. The controller must be prepared to supply both such analyses.

Summary. Someone has epitomized the purpose of budgeting by saying that it is done in order to see what we should do and to see that we do what we should. We must chart the course and lay the plans by which it is to be followed, but we must also plan what is to be done in case we are blown aside the course. There must be some flexibility to the program. The crew must know their responsibilities both on and off the course. The business budget, if it possesses the proper flexibility, will provide an important instrument for the control of operations and costs.

Chapter 6

METHODS OF BUDGETING SALES

Sales as Basis for Budget. The sales budget usually constitutes the foundation of the entire business program and must be formulated before the production, purchasing, research, and financial plans can be developed.

The ultimate goal of an individual business is to make profit consistent with its social objectives, but profit can be made only by selling goods and services at a price in excess of the cost to make (or buy) and sell them. The problem is then one of determining, first, what goods and services can be sold and at what price; and, next, what costs will be entailed in making and selling them. Unless a program can be clearly defined which indicates that the proceeds of the sales will exceed the costs by an amount sufficient to reward the necessary investment and compensate for the risk of uncertainty—for no program of future action can be certain—the venture should not be made; or, if already started, it should be modified or stopped and the remaining investment salvaged.

This obvious truth is so elementary that it seems foolish to state it, yet its violation constitutes one of the greatest single causes of economic waste. Securities are sold, buildings are built, machinery is purchased, material is acquired, and workers are hired to make and sell products or services in the vain hope that profit will result, when the hope has no foundation in experience and fact. Indeed, no painstaking examination is made of the facts bearing upon the venture. Every close observer of business has seen many such instances. He sees them constantly in the organization of new concerns, in new ventures within going concerns, and in the continuation of old projects in going concerns.

Continuous Sales Planning Necessary. In starting a new business or a new venture in an established business there is usually some semblance of a sales program, although it is frequently superficial, but the danger lurks particularly in old projects. An old concern makes Product A and sells it by Method X to Customer Y. The practice has been long continued. Even though it may have been a profitable procedure at one time, is it now profitable? Conditions change rapidly. Over a period of time there is a tendency for high-margin items to lose some of their profitability. Competitors continually introduce new and improved products. Furthermore, markets shift, and the methods of reaching them may need revision. Possibly the effort should be directed to Product B, to Selling Method Z, to Customer W. With innumerable possibilities of combinations of products, selling methods, customers, and other related factors, it is foolhardy to assume that old methods will continue to be satisfactory. If the effort is to be directed into the most profitable channels, there must be a continuous review and revision of the methods employed.

Sales Program Must Be Based Upon Facts. There was a time, not so many years back, when selling was still looked upon as consisting largely of personal magic. If enough of this could be acquired in an organization, the sales program was certain of success. Sales managers were expected to "fire" the organization with enthusiasm and inspire the salesmen with a zeal that would overcome all obstacles. Where, what, when, how, and to whom to sell were secondary considerations. Such a time is still within the memory of the older generation of business executives. But that time has definitely passed.

The modern sales executive must buttress enthusiasm with logic. Inspiration must have a foundation of intimate knowledge—a knowledge as to products and services which are to be sold and the way in which they will meet the need and desires of customers; a knowledge as to where the customers are, how much they can and will buy, when they will buy, what prices they will pay, how much and what kind of effort will secure the orders, and what margins of profit must be secured to make the sales profitable.

There is a time-honored adage "nothing ventured nothing gained," but to venture without learning the facts is foolhardy. There is, indeed, a place in business for vision, courage, and enthusiasm, but they require testing and strengthening in statistical laboratories. Intelligent strategy developed on charts and mathematical precision in setting the range of artillery is likely to be more effective in winning a battle than blind courage of the soldiers. Courage and enthusiasm are soon dissipated when it is found that the effort has been pointed in the wrong direction.

It is true that the factors of selling are less tangible than those of production and a slightly lesser degree of exactness can be expected in the sales program than in the production program. It is easier to predict the amount of material required in producing a unit of product than the amount of sales promotional effort required to educate and persuade customers to buy the product. Neither can be predicted exactly but, by and large, both can be closely estimated if the proper information is secured. If this were not true, business would be entirely a gamble.

If a million dollars is to be spent for materials there is every reason, before the purchases are made, to make certain that the materials will be of the proper specifications and that the product in which they are to be used will be correct in its engineering design. No production executive would be excused for proceeding on a basis of hope. Instead, he is expected to apply every reasonable test. Metallurgists, chemists, mathematicians, engineers, and specialists are called upon to determine the facts. There is certainly no less reason for ascertaining the facts when a million dollars is to be spent in sales effort. What kind of effort should be purchased? Where and how should it be used? What results will be obtained? The fact that these questions cannot be answered with 100% accuracy is no argument against accumulating and using information by which they can be answered with 90%, or even 75%, accuracy. Unless such information is secured and used as a basis for both production and sales plans, a concern cannot expect to follow its most profitable course.

Predetermination of Sales Volume. The statement is frequently heard that "it is impossible to predetermine the volume of sales in our business." If this were literally true, the business would be hazardous indeed. Few people would care to invest in a business in which there were no basis for making a reasonable estimate of the future volume of business. It is true that many concerns do not have available the necessary information from which to make such estimates, but in the great majority of cases the volume can be predetermined, within reasonable limits, when such information is secured. If there is no basis upon which to reasonably estimate sales volume, then there is no basis for estimating profit or return on investment. Investment in such a concern falls more nearly within the classification of chance rather than business.

General Approach to Budgeting and Control of Sales. With an understanding that forecasting and control of sales *can* be done, within reasonable limits, indeed with a realization that it *must* be done if the business objective is to be more effectively achieved, the question becomes one of *how* to proceed. The necessity for securing facts already has been stressed. It will bear repeating, however, that in companies most successful in sales budgeting, those who perform the function usually have a good knowledge of the problems and workings of both the individual company and the industry. Moreover, they are aware of general business trends and conditions, and have the ability to sense the significance of given events on the sales level. Good judgment and common sense are prerequisites to successful sales budgeting, but analysis is a necessary aid. Though the approach in various businesses will differ, the following outline indicates the steps in the development and execution of a sound sales program:

- I. Analysis of Past Sales Performance:
  - A. In relation to various internal sales factors, such as products, territories, method of sale, customers, or size of order.
  - B. As related to influences outside the business organization.
- II. Consideration of Other Related Factors:
  - A. Market analysis.
  - B. Products—changes in.
  - C. Prices.
  - D. Selling methods.
- III. Preparation of the Program:
  - A. Methods to be used in arriving at estimate.
  - B. Analysis, checking, and cross-checking of the information secured.
  - C. Construction of final program by product, territory, etc.
  - D. Securing approval of the program.
- IV. Getting Effective Action:
  - A. Comparison of actual and budgeted program.
  - B. Establishment of sales standards and other controls.

The exact technique used in a particular company will depend on the individual circumstances, and the emphasis to be placed on each step will vary with the nature of the business.

The above outline reveals the order in which the various topics will be discussed preparatory to a review of a detailed sales program.

Sales Must Be Related to Costs. It should also be emphasized here that, in the development of a sales program, sales and costs must be considered jointly. It is not a question of what did we sell or what can we sell, but rather what did or what can we sell *profitably*. Such a study involves the relationship of quantity, price, and cost to make and sell. Other relationships such as rate of turnover, method of financing, etc., must also be considered; but, on the general theory that all costs can ultimately be resolved into production and distribution costs, the basic relationship is that of sales and costs. Any analysis of sales which is to be fruitful in its results requires a continuous relating of sales to cost in order that the sales program selected will be the most profitable one. Particularly is this true of the relationship between sales and distribution costs.

Past Sales Performance as a Starting Point. The first step in the development of the sales budget is usually a thorough analysis of past sales performance. What have been the sales, the cost to sell, and the resulting profits or losses? A study of what has been done does not supply the answer to the question as to what can and should be done, but it affords a starting point and supplies valuable signals as to the directions in which further investigation should proceed. To illustrate, assume that Salesmen A and B have territories of approximately the same potentialities and that a comparison of their performance reveals the following:

	Salesman A		Salesman B		Combinations of Best Performance	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Sales	$1,000	100	$2,000	100	$2,000	100
Gross profit	400	40	600	30	800	40
Selling cost	300	30	500	25	500	25
Profit	$ 100	10	$ 100	5	$ 300	15

Signals for investigation are available here. If the territories possess the same potentialities and other conditions are similar, then:

A should produce sales of $2,000 instead of $1,000.
B should produce a gross profit of 40% instead of 30%.
A's sales should require a selling cost of 25% instead of 30%.
Total profit for the two salesmen should be $600 instead of $200.

Before making the budget for the coming period, investigation should be made of the cause of A's low volume, B's low gross profit percentage, and A's high selling costs.

Analysis of Past Performance Not Sufficient. Such analysis, while valuable in itself, is not enough. It is easily conceivable that a still more profitable program for each salesman would be:

	Amount	Per Cent
Sales	$1,800	100
Gross profit	720	40
Selling cost	360	20
Profit	$ 360	20

This program would result in a total profit of $720 instead of the present $200.

To be sure, the illustration is oversimplified. It is difficult to measure exactly the potentialities of territories; many items with different gross profit margins may enter into the line; selling costs consist of many items, some within and some without the control of salesmen; many of the selling costs are joint costs and are difficult of separation and analysis. Every executive who has attempted this type of analysis has met discouraging obstacles. He has been faced with a hundred reasons (many in the nature of alibis), given by salesmen, department heads, and branch managers, why the analyses are unreliable; but the principle involved is sound, workable, and of the greatest importance. The concern which examines its past sales performance, proceeds from that point to a study of its future sales possibilities, and enforces a program based upon such possibilities is the one most likely to outdistance its competitors.

Numerous Analyses Required. In the study of past sales performance there are, in most concerns, numerous analyses and cross-analyses which can and should be made. It is necessary for the controller and sales executives to select from these the ones which are significant and useful in guiding the future course of the sales program. Some analyses must be made continuously, others only periodically as a test of the efficacy of the program. For example, the records may be so designed as continuously to signal the cessation of orders from any customer or a significant decrease in sales to any customer or class of customers. In fact, such records may be refined to the point of continuously signaling a decrease in sales of each of several classes of commodities to any customer. On the other hand, only periodic studies may be necessary to test the profitableness of orders of varying sizes or of customers whose annual purchases fall within certain limits.

While the nature of the analyses of sales and selling cost naturally varies with the type of business, the following are illustrative:

1. ANALYSIS BY COMMODITIES. Such an analysis should reveal:

Which commodities are being neglected and offer promise of increased volume.

Which commodities are returning insufficient gross profit and whether this is due to competitive conditions, unsatisfactory price policy, or excessive production cost.

Which commodities move too slowly and what adjustments are necessary in production and inventory policies.

Which commodities require excessive distribution cost and what items of cost are excessive.

Which commodities do not return sufficient net profit, the reasons why, and the changes necessary to make them profitable.

Which commodities offer no promise of profit, the indirect losses which would result were such commodities to be dropped, and which of such commodities should be dropped.

In order to answer such questions it may be necessary to cross-analyze the sales of various commodities by customers, channels of distribution, terms, methods of sale, sizes of orders, territories, salesmen, and methods of delivery and service.

These analyses may be extended to individual commodities or to classes of homogeneous items.

Where thousands of items are carried, such analyses as suggested above would appear to involve a vast amount of work. However, it is not always necessary to include every item. It frequently happens that the bulk of the sales are in a comparatively few items. In one concrete case, for example, a concern carries over 30,000 items in stock ready for shipment. Eighty per cent of the money volume, however, is in some 300 items, another 15% of the money volume is represented by items which fall in natural classifications of some 40 groups, leaving not more than 5% of the money volume in a miscellaneous unclassified group. This is a fairly typical situation. While the task of analyzing the sales and selling cost of 30,000 items appears somewhat formidable, it seems far less so when reduced to 340 items and groups.

2. Analysis by Customers. Such an analysis should reveal:

Which customers offer promise of more volume and in what lines it may be secured.

Which customers return insufficient gross profit margin and whether this is due to low prices, terms, or purchases restricted to low-profit lines.

Which customers require excessive distribution cost and what items are excessive.

Which customers are unprofitable, why, and what adjustments are required to make them profitable.

Which customers offer no promise of profit and should be dropped.

In order to answer such questions it may be necessary to cross-analyze the sales to customers by commodities, channels of distribution, terms, methods of sale, sizes of orders, and methods of delivery and service.

The analysis may be directed to either individual customers or classes of customers. In the latter case, the classification of customers may be based upon the average volume of purchases or the nature of the service rendered.

The study may be directed not only to present customers but also to those who have been lost. A study of the causes of loss of customers may contribute valuable information for future plans.

3. ANALYSIS BY TERRITORIES. Territories usually consist of natural market areas, states, counties, towns, or prescribed sales routes. An analysis according to such territories should reveal:

Which territories offer promise of more volume and in what lines it should be secured.

Which territories return insufficient gross profit and whether this is due to competitive conditions, improper price policy, or neglect of high-profit lines.

Which territories entail excessive distribution costs and which cost items are excessive.

Which territories are not sufficiently profitable, why, and what changes in selling and service methods would be necessary to make them profitable.

Which territories offer no promise of adequate profit, what indirect losses would be suffered by the abandonment of such territories, and which of such territories should be wholly or partially abandoned.

In order to answer such questions it may be necessary to cross-analyze the business done in each territory by channels of distribution, methods of sale, commodities, customers, sizes of orders, salesmen, and methods of delivery and service.

4. ANALYSIS BY SALESMEN. An analysis of the work of each salesman should reveal:

Which salesmen are securing inadequate volume and on which commodities and to which customers the sales are unsatisfactory.

Which salesmen are returning inadequate gross profit and why.

Which salesmen have excessive distribution costs including their own expenses and what cost items are excessive.

Which salesmen are returning inadequate profit and what corrections are necessary to make their work profitable.

Here, also, other cross-analyses may be required.

5. OTHER ANALYSES. Many other analyses and cross-analyses of sales and distribution costs will be found useful in particular concerns. For example, analysis may be made by channels of distribution, such

as through wholesalers or direct to consumer; by method of sale, such as mail order, or through company-owned stores; by organization division—branches or districts; by method of delivery; by size of order; by terms of sale—cash, open account, installment, C.O.D., etc.; by time of sales—seasons, quarters, months, weeks, hours of the day, etc.; by the size of units of product sold—dozens, half-dozens, full cases, broken cases, etc.; and by the quality of products—brands, firsts, seconds, mill run, etc.

Another type of analysis of past sales performance is that which attempts to find the cause of weakness in performance. For example, analyses may be made to determine the cause of losing customers, the causes of returns and adjustments, the responsibility for unsatisfactory service, stock shortage, etc.

Extent of Analysis. It is not to be inferred that all the analyses and cross-analyses suggested above are necessary in the same concern, but rather that from many possible analyses the useful ones must be selected.

Generally speaking, the analysis of past sales performance must be extended to gross sales, sales deductions, cost of goods sold, gross profit, and distribution cost in order to provide the information needed. Moreover, often it will be found necessary to distinguish between *direct* and *out-of-pocket* costs or expenses on the one hand, and *continuing* or *period* costs on the other. For example, a given territory may reflect a slight operating loss. Yet, included in the charges might be a substantial amount of allocated general selling expenses which would not be reduced if the territory were abandoned. Such costs must be known in formulating decisions on territorial coverage.

Finally, and in summary, the accountant making the analyses should realize that the various studies are not being undertaken merely to know what results were produced, so that provision can be made for recurrence in the sales program. Rather, the objective is to search out weaknesses and improve the sales program and the related direction of sales effort. The planning is for *profits,* not merely sales volume.

Sales in Physical Units. Wherever practicable the analysis of past sales performance should be made in terms of physical units, of goods or services, as well as dollars. This eliminates the element of price fluctuation. Where this is not practicable a price index should be developed and maintained whereby the money volume of different periods can be converted into physical volume for comparative purposes.

Data Must Be Interpreted. The possible analysis of past performance relative to sales and selling costs is almost limitless and a word of warning is in point. No amount of analysis is valuable in itself. A hundred pages of sales statistics revealing what has been sold, to whom, how, when, and at what cost will neither increase sales nor reduce selling costs. It is only the intelligent interpretation of such data and the translation of its signals into future action that justifies its cost. This warning should be directed somewhat more to controllers, whose duty it is to gather the data, than to sales and general executives, whose duty it is to act upon it.

Some controllers, in their enthusiasm to supply information, rate higher when tested by quantity than by quality. They supply raw material rather than finished product. Most of such material is wasted. It is one thing to supply a wealth of information to sales executives relative to the sales to every customer or of every product, in the expectation that such executives will pore through this material for important deductions; and quite another to say that the sales made to Customer A by Method Y have been subjected to the light of investigation and for reasons given it appears that the sales department should consider the desirability of shifting more effort to Customer B or to Method X. If to this is appended the specific data which will be needed by the sales executives in making the decisions, the effort will be fruitful. If such information is not coming through to the sales executives, the deficiency is in the controller's department.

In many instances the investigation must be a joint effort of the controller and sales executive; in others, the controller can do no more than suggest the desirability of further investigation of such nature that it must be undertaken by the sales department.[1]

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[1] For illustrative analyses see *Controllership—the Work of the Accounting Executive,* by J. Brooks Heckert and James D. Willson (New York: The Ronald Press Co., 1952), pp. 95-108.

Chapter 7

GENERAL BUSINESS CONDITIONS AND THE SALES BUDGET

Sales Program Conditioned by Internal and External Factors. In the outline on page 71 of the development of the sales program it is stated that consideration must be given to both internal and external factors. Internal factors pertain to the company's past actual sales experience, as discussed in the preceding chapter; funds available for expansion; and the sales effort planned for the future. External factors pertain to general business conditions, market potentials, and competitive conditions. External factors are beyond the company's control but are subject to study and analysis. They largely prescribe the sales possibilities.

Assuming that a thorough analysis of past sales performance has been made and that the relationships, trends, and signals revealed thereby have been intelligently considered, attention should be directed next to a study of the external factors bearing upon the sales program.

Forecasting General Business Conditions. The effects of political and economic changes throughout the world are reflected on individual business communities, industries, and concerns more quickly than ever before. Changes in political stability; war and threats of war; governmental regulations and restrictions of production, trade, and finance; technological developments; abundance and scarcity of crops; and general cyclical economic trends are illustrative of the factors which may quickly affect the sales possibilities of an individual concern. It is impossible exactly to predict the time and intensity of movements related to such factors. Any attempt will result in a certain degree of error. But while the effect of changes is reflected today more quickly than ever before, the information signaling such changes is also more complete and more quickly available. Based upon such information a prediction must be made of future general business conditions and their effect on the company's sales program. This appraisal should include not only the trend of general business conditions but also the effect which such trend will have on the industry of which the concern is a part, the territory to be served, and the concern itself.

In general, two basic methods of forecasting the trend of general business conditions are in use by American business concerns. One method is for the major executives to simply "use their judgment"; that is, no formal studies are made in the way of economic analysis. Each executive expresses his opinion as to what lies ahead and either the majority rules or the opinion of the major executive governs—influenced and modified perhaps by the opinions of the others. The opinions of executives are usually based largely upon their own past experiences, observations, and reviews of current literature bearing upon economic analysis and forecasts. This method is followed by probably more than 99% of the business concerns of this country; indeed, it is the only method open to most very small concerns. A second method, followed by an increasing number of medium-sized and large concerns, is to establish their own facilities for economic analysis and to be guided largely by the signals provided by such study. Even with such review a large element of judgment is required. The economic analyst must select from many possible indicators the ones which are currently useful. He may assume that history will repeat itself but this will not always follow where major changes have occurred in the political, social, and economic environment. Finally, the significance of various indicators must be weighed in the light of ever changing circumstances. All of this requires experienced judgment.

It is beyond the scope of this book to discuss methods of business forecasting. There is a vast amount of literature on this subject. It is attempted here only to outline the use of general business forecasts in developing the sales program.

Relating the Sales Program to General Business Conditions. One method of relating the sales program to general business conditions is to chart the company's sales experience during the past, compare this with a chart of general business conditions, and attempt to find some correlation between the two. It may be found, for example, that general business conditions turn upward some six months in advance of the improvement in the company's sales and, conversely, that the company's sales turn downward some six months later than the turn in general business; or, that when general business is 15% below normal, the company's sales are 25% below; and, when general business is 15% above, company sales are 25% above. Now, if this is the record of past behavior, and if the general business level of the coming months can be forecast, then such a relationship will be useful in developing the sales program of the individual concern for the immediate future. Usually some correlation can be found between the sales of a company and some one or more important business indices.

Factors in Sales Variations. To make such an analysis as indicated in the preceding topic, it is necessary to recognize that there are usually four factors affecting the month-to-month sales of a particular company:

1. Secular trend—the long-time tendency of sales to increase or decrease as a result of general changes in wealth, population, or other demand factors.
2. Seasonal variations—the changes in sales which normally come with the different seasons of the year.
3. Cyclical trend—the tendency of sales to increase or decrease as a result of changes in general business conditions.
4. Random, accidental, or residual fluctuations—variations resulting from unusual disturbances such as strikes, wars, disasters, etc.

For example, the sales of a particular industry (or, in some cases, the sales of a particular company) may show an average increase of 5% a year over a period of 20 years. This expresses the *secular trend.* Sales of building supplies are heaviest in spring and summer, thereby expressing a *seasonal variation.* Sales in most industries were well above normal at the peak of prosperity in 1929, and well below normal at the depth of the depression in 1933, thereby expressing the *cyclical trend.* Finally, a particular plant was closed by strike for three months, thereby introducing a *random* variation.

The existence of these factors must be recognized and their importance weighed in any effort to prepare an intelligent sales program.

Elimination of Secular and Seasonal Factors. If the effect of the secular trend and the seasonal variation are statistically eliminated, and if correction by estimate is made for the effect of any major *random* variation, it is possible to compare a company's sales trend with the trend of general business conditions in the past. This is necessary in order to ascertain the effect of general business conditions on the company's sales.

To reduce this procedure to the simplest possible terms, assume that the normal growth of business (as expressed by the secular trend) should result in an increase in the sales of a particular company of $200 per year. If the sales of this company for the past six years are under review, we might then expect sales as follows:

1st year	$4,000	4th year	$4,600
2nd year	4,200	5th year	4,800
3rd year	4,400	6th year	5,000

Assuming no change in general business conditions, the above are the sales which might be expected. Now assume that, due to seasonal influences, sales are on the average distributed as follows throughout the year:

1st quarter	20%
2nd quarter	40
3rd quarter	30
4th quarter	10

If no factors were at play, other than secular and seasonal trends, the sales of the company would appear as shown in the first column of Figure 18. The actual sales for the same period (as assumed) are shown in the second column, and the percentages of actual sales to normal sales are shown in the third column.

The third column thus shows the deviation of the company's actual sales from the sales as they would have been had they followed the nor-

		Normal Sales Volume as Expected from Secular and Seasonal Trends	Actual Sales	Per Cent of Actual Sales to Normal Sales
First year:				
1st quarter	20%	$ 800	$ 640	80
2nd quarter	40	1,600	1,344	84
3rd quarter	30	1,200	1,056	88
4th quarter	10	400	368	92
Total	100%	$4,000	$3,408	85
Second year:				
1st quarter	20%	$ 840	$ 806	96
2nd quarter	40	1,680	1,680	100
3rd quarter	30	1,260	1,310	104
4th quarter	10	420	454	108
Total	100%	$4,200	$4,250	101
Third year:				
1st quarter	20%	$ 880	$ 986	112
2nd quarter	40	1,760	2,042	116
3rd quarter	30	1,320	1,584	120
4th quarter	10	440	546	124
Total	100%	$4,400	$5,158	117
Etc.				
Sixth year:				
1st quarter	20%	$1,000	$ 880	88
2nd quarter	40	2,000	1,680	84
3rd quarter	30	1,500	1,200	80
4th quarter	10	500	380	76
Total	100%	$5,000	$4,140	83

FIGURE 18. Comparison of Actual Sales with Normal Trend of Sales

mal secular and seasonal pattern; or, in other words, the deviation which is caused by the effect of general business conditions.

Basic Indices Used in Forecasting. Once the secular and seasonal influences, and major random fluctuations have been eliminated from a company's sales pattern, the cyclical effect should remain. It then becomes desirable to select a representative index of general business for comparison purposes. A substantial number of such indices have been developed by both public and private sources. Some of those in most common use, together with frequency of issuance, are:

Name	Frequency	Original Source
Gross National Income	Q	U.S. Dept. of Commerce
National Income	Q	U.S. Dept. of Commerce
Personal Income Payments	M	U.S. Dept. of Commerce
Retail Sales	M	U.S. Dept. of Commerce
Department Store Sales	W	Federal Reserve Board
Industrial Production	M	Federal Reserve Board
Wholesale Prices	M	U.S. Dept. of Labor
Employment	M	U.S. Dept. of Labor
Automobile Production	W	Ward's Reports
Carloadings	W	Assoc. of Amer. Railroads
Steel Production	W	American Iron & Steel Institute
Construction	M	F. W. Dodge Corporation

Forecasts of some of the series may be obtained from public or private sources and may be useful in checking against company estimates of future trends.

Selecting the Index. The utilization of refined statistical techniques may be dangerous in unskilled hands. However, such methods may be very helpful when properly applied. Since the use of these devices is beyond the scope of this volume, only some general comments are made.

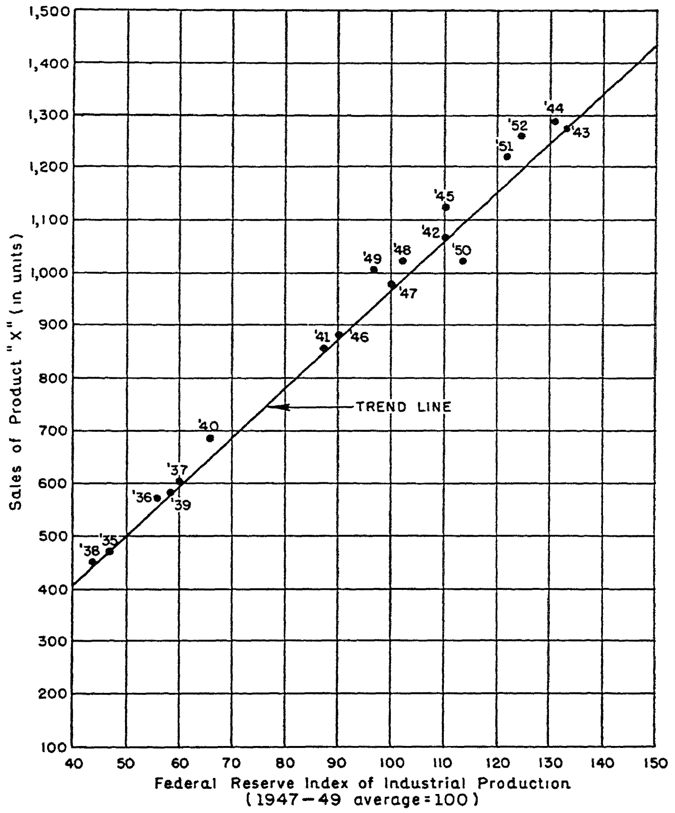
In many cases, forecasts of industry sales may be obtained only at great cost. The following method is suggested as an indicator technique for those companies which must develop their own:

1. Select an index which is in such general use that published opinions are readily available without the cost of a special survey.
2. Determine the relationship between the index and company or industry experience over a period of years. It is often desirable to use industry data, if available, so as to (*a*) avoid distortion by reason of factors affecting the company, but not the industry, and (*b*) assist in determining the company's competitive status.

   A simple scatter-chart technique is all that is required to establish the degree of relationship. The industry or product sales are plotted in relation to the index, and a line is fitted by inspection. For example, in Figure 19, sales of product "X" were plotted against the Federal Reserve Index of Industrial Production. Thus, when the F. R. index was at 100, the sales of product "X" were 975. The closeness of the various dots to the line is indicative of the reliability of the correlation.

Adjustments to a single index may be made, but this technique is best explained in texts on statistical methods.

3. Secure a forecast of the selected index.
4. Through reading the scale, translate the forecast into company or industrial sales.


THE JONES COMPANY

SALES OF PRODUCT "X" AS RELATED TO INDUSTRIAL PRODUCTION

FIGURE 19. Relationship Between Sales of Product "X" and Index of Industrial Production

Comparison of General Business and Company Cycles. Referring to the previous illustration, a comparison of company and a general business index is illustrated in Figure 20.

Here it is revealed that when general business conditions are at 90% of normal (first quarter of first year and third quarter of sixth year), the company's business may be expected to be at 80% of normal; when general business reaches 112% of normal (fourth quarter of third year), the company's business may be expected to reach 124% of normal; and when general business declines to 88% of normal (fourth quarter of sixth year), the company's business may be expected to decline to 76% of normal.

	Selected Index of General Business	Company's Index as Shown on Figure 18
First year:		
1st quarter	90	80
2nd quarter	92	84
3rd quarter	94	88
4th quarter	96	92
Second year:		
1st quarter	98	96
2nd quarter	100	100
3rd quarter	102	104
4th quarter	104	108
Third year:		
1st quarter	106	112
2nd quarter	108	116
3rd quarter	110	120
4th quarter	112	124
Etc.		
Sixth year:		
1st quarter	94	88
2nd quarter	92	84
3rd quarter	90	80
4th quarter	88	76

FIGURE 20. Comparison of General Business and Company Sales Indices

As a general picture, it appears that the company's business drops below the level of general business, improves at a faster pace, reaches normal at about the same time, moves upward at a faster pace, reaches a substantially higher level, recedes at a faster pace, reaches normal on the downward trend at about the same time, and again falls to a level below general business.

Such analysis provides a fair guide as to the manner in which the company's sales are affected by general business conditions.

Use of Comparison in Making Sales Program. It may be assumed, next, that a sales program is being prepared for the first two quarters of the seventh year, that the executives of the company predict a level of general business at 90% of normal for the first quarter and 92% for the second. What sales should the company expect?

The normal growth of business, as expressed by the secular trend, should provide sales in the seventh year of $5,200 (that is, $5,000 in the sixth year plus $200 of normal growth). This $5,200 should be divided seasonally as follows:

1st quarter	20%	$1,040
2nd quarter	40	2,080
3rd quarter	30	1,560
4th quarter	10	520
		$5,200

Hence, if general business conditions were at the normal level, the sales for the first and second quarters should be $1,040 and $2,080, respectively. But it is expected that general business will be at 90% and 92% of normal. Moreover, by referring to Figure 20, it will be seen that when general business is at 90% of normal, company sales are 80% of normal; and when general business is at 92%, company sales are 84%. This gives the following sales expectations:

1st quarter (80% of $1,040)	$ 832
2nd quarter (84% of $2,080)	1,747

Hence, a basis is secured for arriving at a definite figure of sales expectations.

Comment on Method. The foregoing statistical procedure may be criticized as oversimplifying actual conditions; however, the basic principle is sound and widely applicable. The following points should, however, be noted in connection with such analysis:

1. The indices of general business conditions to be used should be the ones which are most representative of the business at hand. Some firms have found it desirable to develop a composite business index by taking a mathematical average of several individual indices. This can be done by resolving the various indices to a common base. For example, each index might be so adjusted as to use the year 1946 as representing 100.

2. It is desirable to select an index or indices which are available

promptly at the close of each month. Most of the leading indices are now available by the tenth of the following month.

3. Indices must be selected which have been adjusted for secular and seasonal trends.

4. Some basis must be found for determining the company's secular trend. This may be a certain percentage increase over the sales of a previous year, which is accepted as a base; or it may be assumed that each year should show a certain percentage increase over the previous year. The percentage increase should be that which expresses the normal growth of the industry of which the company is a part.

5. For statistical accuracy, the base year upon which the individual company's secular trend is based should be the same as that of the index selected to express general business activity.

6. While the above illustration covers only six years, and covers only one complete business cycle, it should be understood that a much longer period is desirable to express the relationship between the sales of a particular industry or a particular concern and the trend of general business. The average deviation occurring through several cycles constitutes a more dependable guide.

7. It is frequently desirable to express seasonal trends through the use of monthly rather than quarterly figures.

8. While the foregoing illustration relates dollar sales of the individual company to general business, a similar relationship may be developed for physical volume. Here general business indices should be selected which are expressive of the trend in physical production.

9. In some industries an analysis of the trend of physical volume is more useful than the trend of dollar sales. This is particularly true in periods of marked price fluctuation.

10. If physical volume is used, it is necessary to make additional studies of price trends. This involves such factors as long-time trends from higher- to lower-priced units, or vice versa, and such other factors as relate directly to price fluctuations.

11. In some manufacturing industries, where information is available concerning the sales of wholesalers or retailers or the activity of consumers, the relationship of these to general business can be charted in a similar manner. Such relationships will add to the accuracy of the manufacturers' forecasts.

12. It should perhaps be noted that the method illustrated is of somewhat more importance in staple lines of goods than in the case of specialties. There are instances in the latter case where a comparatively small allowance need be made for expected changes in general business conditions.

13. A comparison of company sales with general business condi-

tions is valuable not only as an aid to planning the future sales program, but also as a means of testing the company's performance. If the company's sales are gradually dropping behind general business, such a comparison provides a signal for changes in policies; if the company is holding its own or exceeding general business, it is apparent that its policies are working successfully.

Limitations in Use of Method. No amount of refinement of statistical technique will produce a method by which the future sales of an industry or individual concern can be definitely predicted. Valuable as they are, such methods and the relationships which they develop must be used with judgment. They provide useful guides. Beyond that, the decision as to the sales program must rest upon the experience and judgment of the executives.

Illustrative Procedures. A good example of the use of a lead-lag correlation in forecasting business sales is that describing the methods of the Grinnell Company:[1]

> Years ago the company discovered that sales of most of its products followed the trend of building contract awards. Tests showed that there was a high degree of correlation. A study of seasonal patterns, however, revealed that awards reached a peak in May, while company sales were highest in October. In other words, the demand for Grinnell products did not come until five months after contracts were awarded.
>
> When this is corrected for by charting building contracts ahead five months, the relation of contracts to company sales becomes readily apparent. In [Figure 21], the contract award figure for January is plotted as June, February as July, and so forth. In the chart, the sales of one territory are compared with the contracts awarded in the same territory.[2]
>
> **Method.** In forecasting, the company uses this correlation as follows. First, the company divides building contract awards for the latest three months by awards for the same three months a year previous to get a factor expressing this relationship. This factor is then applied to sales for the three months' period of the year prior to the period for which a forecast is being made to obtain the desired estimate. For example, if the forecast is made in August, the latest contract award figures would be for July. Therefore, May, June, and July awards would be compared with those for the same months of the preceding year. Assuming a 10% increase, this would be applied to the sales for October, November, and December of the preceding year, as these are the months (allowing for the five-month lag) which correspond to those for which contract awards are being compared. The effects of seasonality are thus eliminated from this forecast.

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[1] Adapted in part from "Forecasting Sales," *Studies in Business Policy,* No. 25 (National Industrial Conference Board, Inc.), pp. 17-18.

[2] When total company sales are plotted against total contract figures, the relationship is even more obvious.

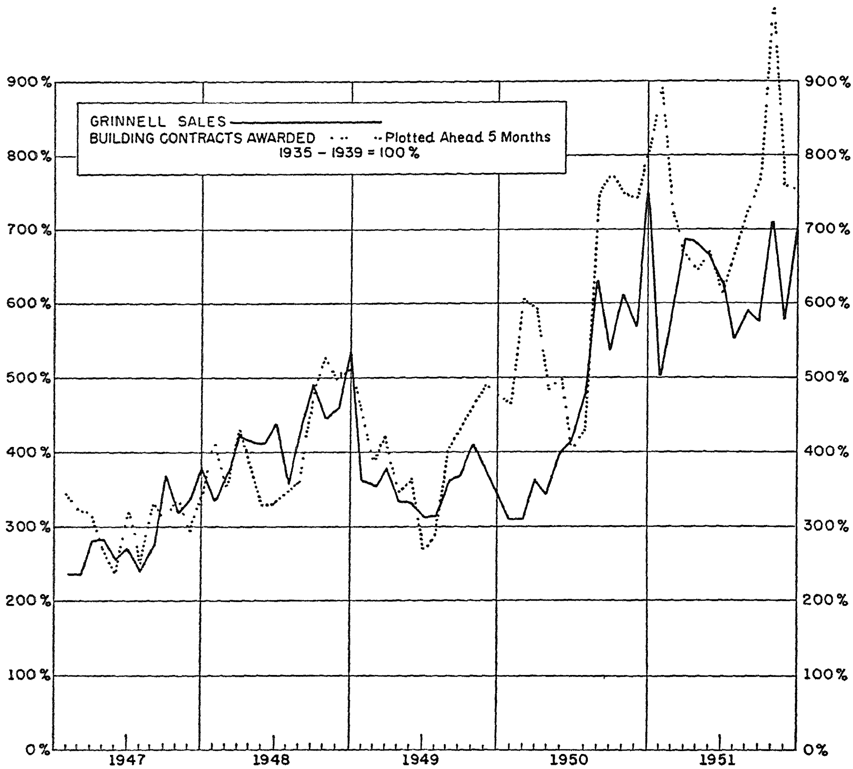

Figure 21. Chart Showing Correlation of Grinnell Company Sales to Building Contracts Awarded

To check this first forecast, the company takes actual sales for the latest available quarter and extends them in accordance with the company's seasonal pattern to get an independent estimate. For example, if first-quarter sales usually furnish 20% of the year's business and the third quarter 27%, then an estimate of sales for the third quarter can be made in April by multiplying actual first-quarter sales by 1.35.

These forecasts are then examined in the light of price and competitive situations, availability of material, general business conditions and other factors which may cause deviations from the "normal" trend as indicated by the correlation.

Accuracy. On a quarterly basis, forecasting six weeks before the beginning of the quarter, the company's error in the total sales forecast is usually less than 10%, although some territories may be off as much as 25%. Individual product forecasts are usually within 15%. On an accumulated basis, annual forecasts generally come within 5% of the actual sales.

The final forecasts are used for production and inventory control, for setting sales quotas and for directing sales effort.

Chapter 8

OTHER FACTORS IN DEVELOPING A SALES BUDGET

Behind the Figures. The preceding two chapters have dealt with that phase of the sales budget which involves a review of a substantial amount of statistical information, namely (*a*) an analysis of past sales on various bases, and (*b*) the numerical relationship between company sales and other external information. It goes without saying that these mathematical approaches must be tested by logic and the reasonableness of the figures.

In addition, there are other phases of the sales program which must be subjected to varying degrees of study. Perhaps the figures are not quite so much in evidence, but certainly the accounting executive must be conversant with them in evaluating any information he does receive or compile. This is a matter of "getting behind the figures" to the fundamental considerations which must govern any sales program. These factors involve the products, selling prices, methods of sale, and market analysis.

Selection of Products. When the business was organized, or when policies were set, a determination was made as to the type of product to be manufactured or sold and the markets to be served. However, from time to time changes must be made, new products must be added, and some lines must be dropped. This may be the result of competition, of a need or desire for diversification, or other considerations. Although the typical concern usually does not make drastic changes in its line of products from one budget period to another, there is usually a more or less continuous change. In order to develop an intelligent budget, and to provide the necessary safeguards against the addition of ill-advised products, certain basic decisions must be made regarding new items.

There are a large number of questions which must be answered regarding a prospective addition to the product line. Some of these are as follows:

1. Why is the product requested to be added?
2. Is the product within the line of business as contemplated by the owners?
3. Does the item meet the needs of the customers to whom it might be sold? Has a qualitative market review been made?
4. At what price must the article be sold to secure a reasonable market?
5. What is the market for the product, i.e., quantity to be sold per year? How much time will elapse before such a level is reached?
6. What additional equipment is necessary to produce it?
7. What is the cost of producing the article?
8. Are any special manufacturing difficulties foreseen?
9. Are any problems of raw material procurement involved?
10. What inventories are needed? What is the turnover expected to be?
11. At a realistic sales level, what is the manufacturing profit? What is the relative profitability of the product per machine hour? Per dollar of capital investment?
12. If the profit is less than normal, why must the article be added to the line?
13. What will be the effect on other product lines?
14. Through what channels of distribution will the item be sold and at what cost?
15. What, if any, special promotional effort will be required?
16. How will the company trade name affect the product, and vice versa?
17. Can the company secure a proprietary interest in the product? How?
18. What are to be the terms of sale?

When questions such as these have been reviewed and satisfactorily answered, the product may be added. In preparing a sales program, it can be seen that proper answers to such questions as the above are essential to sound decisions.

Setting the Prices. A sales budget cannot be completed until a decision has been reached as to price policy and an estimate has been made as to the prices that can be secured for the goods which it is planned to sell.

As a very general statement it is necessary to estimate prices which will be in line with *the market* during the budget period. In many instances it is difficult to find a definite expression of market prices even currently, not to mention the greater difficulty of projecting the problem into the future. In such cases it is necessary for the executives to examine closely the factors which will ultimately determine the market price. To do this the executives should have a clear understanding of the basic factors underlying price determination. A few comments are in order regarding price policies under conditions approaching monopoly as well as under more competitive conditions.

Price Policy in Monopoly Markets. Where a concern possesses a degree of monopoly on certain products, as for example, through patents, it should attempt to find the price which will immediately yield the greatest net profit. This price should then be modified by the possibility that a high profit will attract competition into the industry or a demand for governmental interference. Such possibilities may suggest a reduction in price from that which will produce the greatest immediate profit to that which will produce the greatest profit in the long run.

In determining the price which will immediately yield the greatest profit, it is necessary to estimate the number of units that can be sold at all contemplated price levels and the total cost (including interest on

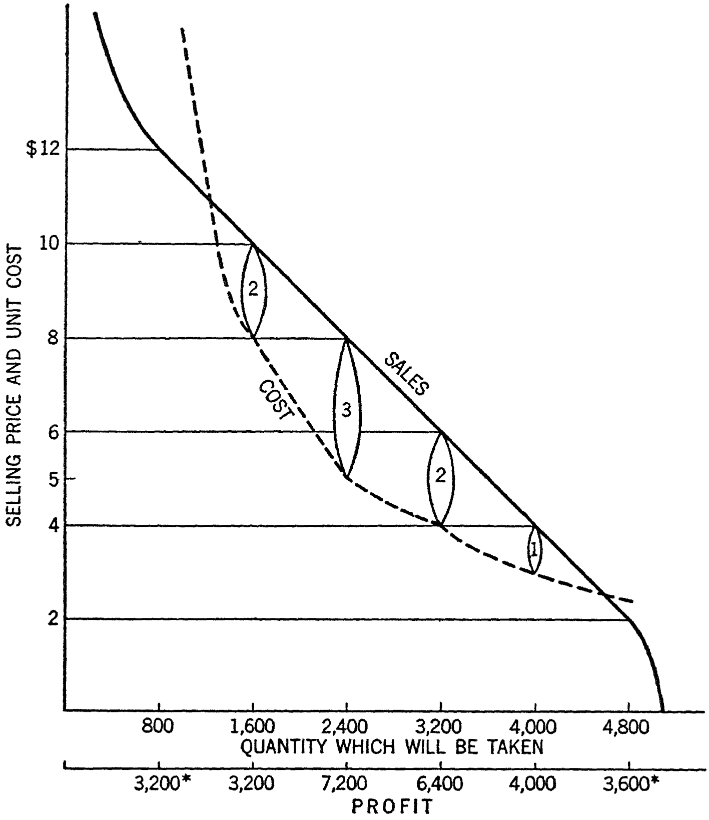

FIGURE 22. Method of Setting Selling Price in a Monopoly Market

investment) per unit at each corresponding level of production. Usually as the physical volume of sales increases, the cost per unit decreases.

Figure 22 illustrates the application of this procedure. Here it is suggested that the unit selling price may be set at $12, $10, $8, $6, $4, or $2. Estimates are then made as to the number of units which can be sold at each price. These are indicated by the *sales* line. Thus, it is estimated that 1,600 units can be sold at a price of $10 per unit, whereas 4,000 units can be sold at a price of $4. Likewise, the *cost* line shows the estimated total unit cost (including interest on investment) at each volume level. Thus, it is estimated that the unit cost will be $5 when volume reaches 2,400 units. The spread between selling price and cost constitutes the unit profit, which, multiplied by the number of units, gives the total profit at various price levels. Thus, at a price of $10, the profit will be $2 per unit, the volume 1,600 units, and the total profit $3,200. At a price of $8, the total profit will be $7,200. At a price of $6, the total profit will be $6,400. It is apparent here that the greatest profit will be made at a unit price of $8.

If a concern produces only one product, it is possible to estimate the total cost per unit, at different volume levels, with reasonable accuracy. Where there are numerous products with a considerable element of joint production or distribution cost, the problem is difficult. It may even be necessary to know what the *additional* cost would be of making and selling a certain product in various physical quantities. By *additional* cost is meant such production and distribution costs as would arise by adding this product, over and above the costs which the company would have with its other products. In any event the sales executives must, to the best of their ability, estimate the volume which will be sold at different price levels and the controller must estimate the total unit cost at each corresponding volume level.

In general, the greater the degree of monopoly control which exists, the greater will be the possibility of price control, the slower will prices respond to changing conditions, and the more accurately can the sales plans be formulated.

Price Policy in Other Markets. The vast majority of concerns find that their products fall between the extremes of perfect and monopoly markets. There is no place to turn for an immediate expression of the market price as in perfect markets, yet the prices may respond rather quickly to market conditions. Some degree of control over prices may exist, yet it may not approach closely to that of a monopoly market. Products may or may not be highly standardized as between producers and there may exist varying degrees of differentiation between the products of competitive concerns and the prices in different localities. Yet in the face of all this, prices must be set. Moreover, the problems vary somewhat as between manufacturers, wholesalers, and retailers.

Such concerns must frequently consider prices from both a short-term and long-term viewpoint. Immediate price policies may be governed by such factors as competitive conditions, efforts to introduce new products or to enter new territories, idle production and distribution facilities, maintenance of position in the market, etc. All such factors and circumstances must be considered and, not infrequently, it is necessary to set temporary prices which are not justifiable as a long-run policy.

Where market prices cannot be clearly defined and where there is little price control, the basic long-run price policy should be to establish prices which will provide for the cost of efficient production and distribution and a reasonable return on justifiable investment.

Such a statement appears somewhat academic to the business executive who is faced with immediate and concrete problems of bidding, markups, discounts, and current competitive practices.

It leaves many specific questions unanswered. Just what constitutes the cost of efficient production and distribution, what is a reasonable rate of return, and what constitutes justifiable investment? With the ebb and flow of general business conditions and the vicissitudes of a particular industry and business, such factors are not easy to establish. Moreover, the problem is frequently present as to whether immediate circumstances justify some deviation from the long-run price structure and, if so, to what extent.

Such problems extend far beyond the province of budgeting but it is the development of the budget which brings them to the attention of the executive group in time to give them intelligent consideration.

Every concern should anchor itself to a long-run price policy based upon the factors noted above. Temporary departures from such a policy are sometimes necessary but they should be the result of careful consideration of all the factors involved.

Cost Information and Price Policy. While every experienced executive in a competitive field knows that prices cannot be rigidly keyed to costs, it should be strongly emphasized that detailed cost information is essential both in establishing price policies and in making intelligent deviations from such policies. This extends to the costs of both production and distribution. Such costs must be thoroughly analyzed as to their fixed and variable elements and it must be known when such costs are excessive. Also, the analysis of costs of distribution must frequently be extended to different territories, customers, channels, methods, etc., before price policies can be intelligently determined.

Selection of Agencies. Another important consideration in sales budgeting is the selection of agencies, channels, and methods. The marketing agencies commonly employed are exporters, sales agents, commission men, brokers, jobbers, wholesalers, and retailers. To what extent shall these various agencies be employed? Obviously, a concern will not shift frequently from one set of agencies to another, but questions often do arise in the course of the sales planning as to the desirability of placing more emphasis on certain agencies as against others. Consideration must be given to both the immediate profit possibilities and the long-run advantages and disadvantages of the various agencies.

Selection of Channels. The distribution routes usually recognized as standards are:

1. Manufacturer to wholesaler to retailer to consumer.
2. Manufacturer to retailer to consumer.
3. Manufacturer to consumer.

Many concerns employ numerous channels simultaneously; in fact, such a tendency has increasd in recent years. What channels should be employed? Obviously, this is an important consideration in developing the sales budget. Where past experience is available, the controller can supply useful analyses of the costs, sales, and profit results as related to the various channels. This will reveal weaknesses in past performance and focus attention upon particular channels in which the results are not commensurate with the costs. When new proposals are under consideration, concerning which there is little or no background of experience, the sales executives must estimate the units and prices, or dollar sales, to be secured and the necessary sales effort. The controller must then translate these into an operating and financial picture which will assist in executive decision. The question may be that of abandoning entirely certain channels and adding others or of directing a larger part of the sales volume through one channel at the expense of another.

The problem is by no means a purely statistical one. There are certain advantages and safety in the employment of several channels and certain dangers in the restriction of the sales flow to one route. The immediate opportunities presented in certain channels must be weighed against any possible long-run disadvantages or dangers.

Cost Versus Directness of Channel. The manufacturer must concern himself not only with the route by which the goods reach his own customers but also with the full route to the ultimate consumer. If this is costly, the consumer will eventually turn to competitors who have found a less expensive route. This may be either a more or less direct route. It is not the directness of the distribution channel but the total cost from producer to consumer which must be considered.

While it is beyond the scope of this book to consider the advantages of various channels of distribution, it should be noted that the elimination of certain middlemen does not necessarily reduce the cost of distribution. Certain distribution functions must be performed and the elimination of one agency may merely transfer the function to another which may perform the function at a greater or lesser cost. There is a common saying that the cost inheres to the function and not to the agency which performs it. The question is not one of the number of agencies which participate in the distribution process but rather the combination of agencies which can perform the distribution functions most economically.

Selection of Sales Promotional Methods. Closely allied to the problems of trade channels is the selection of sales promotional methods. The promotional effort may take the form of:

National and local advertising through newspapers, magazines, radio, television, billboards, etc.
Direct mail advertising.
House-to-house solicitation.
Demonstrations.
Cooperation of various types with wholesale and retail dealers.
Sales campaigns involving various combinations of methods.

The sales budget must give consideration to the amount of effort to be directed to each of such promotional methods and the timing of the expenditures. Sales executives should chart their plans, basing their decisions upon the analysis of past results and the study of market potentials. The purpose of such planning is to encourage study, well in advance, of the possibilities and advantages of the various methods and thus to direct the effort to methods which offer most promise of profitable results.

Market Analysis

Purpose and Importance of Market Analysis. In conjunction with an analysis of past sales performance, general business conditions, products to be sold, prices to be charged, and methods of sale, consideration must be given also to markets. What are the available markets for the industry as a whole, what are the markets in particular areas and with particular classes of customers, what share of these markets should the company secure, and what marketing costs are necessary to develop and maintain the markets?

A study of past sales performance is extremely important. It produces concrete facts based upon actual experience. But it is not enough. What a company has done is often a poor guide as to what it can and should do. A business program must not be too securely anchored to the past. New trade developments, new products, new policies, change in price levels, new demands of customers, new competitive conditions, and weakness in past performance are all indicative of the fallacy of basing the sales program entirely on past performance. With concerns of long experience, past sales performance is more useful than with newer concerns; but in all cases, past experience alone is a dangerous guide.

A bold attempt to find the possibilities of the market and to direct the sales program to these possibilities comprises the dynamic element in sales budgeting.

As with all phases of business planning the problem of market analysis is interrelated with other problems. What markets shall be covered depends to a certain extent upon the products to be offered, the prices to be set, and the channels of distribution to be used; just as these factors are dependent in a certain degree upon the markets to be covered. No problem of sales planning can be entirely isolated; however, when general policies relative to related factors have been determined an intensive analysis of the markets may proceed.

It is beyond the scope of this book to consider the detailed methods and procedure for market research and analysis. This is an important subject in itself and a considerable amount of literature dealing with such procedure is available. It is important here, however, to take note of the basic purpose of such study, including the continuous nature of the problem, and to emphasize its necessity as a basis for successful sales budgeting.

Assuming that policies have been established relative to the products to be offered, basic sales methods, and the prices to be set during the budget period, the market inquiry of immediate concern in budgeting is usually related to territorial or customer analysis, or both.

Territorial Analysis. In what territories should a company sell? The immediate answer might appear to be that it should sell in all territories where it can make a profit. A more tenable conclusion is that it should sell in those territories in which, in the long run, it can deliver the goods or services at as low a total cost as substantial competitors. If it is apparent that competitors will, in the long run, have an advantage, it is hardly good business to develop the market.

To select territories on this basis requires an evaluation of territorial sales possibilities and an analysis of production and territorial distribution costs.

Such an analysis often leads to the question of borderline territories—those in which a profit would result if only additional costs were included (that is, the production and selling costs which would be entailed over and above what the total costs would be without the additional volume) but which would not show a profit if a proportionate share of all costs were considered. There is no categorical answer to such borderline cases. Individual circumstances must govern, but such territorial expansion is always open to the question as to whether or not the effort involved might be expended more profitably elsewhere.

Practically speaking, the problem of territorial analysis is to find those territories where the company's products have the greatest promise of profitable sales and to direct the sales effort in accordance with such potentials.

Territorial Evaluation Factors. In the selection and evaluation of territories many factors must be considered. Illustrative of these are:

1. Climatic Conditions.
2. Sectional Prejudices and Preferences.
3. Racial and Religious Factors.
4. Cultural Factors.
5. Occupational and Industrial Factors.
6. Distance and Transportation.
7. Regulatory Legislation.
8. Buying Power. There is available a very large number of statistical indicators, relative to the buying power of the various territorial areas such as states and counties. Common among these are:

    Income tax payers
    Domestic lighting consumers
    Bank deposits
    Automobile registrations
    Telephones
    Population
    Magazine circulations
    Department store sales
    Business population
    Bank clearings or check transactions
    Assessed valuation

Crop production
Building contracts awarded
Payrolls

The foregoing factors are illustrative of territorial indices of a more or less general nature. In the case of a particular concern there are frequently specific indices which greatly refine the territorial potentialities. For example, in the sale of electrical appliances, the percentage of homes wired would be a controlling factor; or, in the sale of election booths, the number of voting precincts would govern. Different factors must frequently be used in the analysis of territorial potentialities for the various products of the same concern.

Weighting of Territorial Sales Factors. Where several factors are used in evaluating territorial potentialities a different weight may be assigned to each factor. The relative weight to be assigned is to a considerable extent a matter of judgment, as there is seldom any method by which the exact importance of the various factors can be determined. (Correlations based upon actual past experience can, of course, be ascertained.) Naturally the fewer the factors to be considered, the simpler the problem will be.

As a simple illustration of weighting procedure, assume that a certain company has two products, A and B. The products are sold in four territories bearing numerical designation. Only two factors are to be considered, population and income. In the case of Product A, it is decided that the weighting should be:

Population	5
Income	1

This signifies that while the income of a territory has some bearing upon its sales possibilities, population has five times as much bearing.

With Product B, the weight is:

Population	1
Income	2

Here, income is assumed to have twice as much influence on sales possibilities as population.

Assume next that the percentages of population and income, in each territory, to the total of population and income in all territories, are as follows:

	Population	Income
Territory 1	30%	25%
Territory 2	40	35
Territory 3	10	20
Territory 4	20	20
Total all territories	100%	100%

The method of weighting these factors is then shown in Figure 23. Here it appears that Territory 1 should produce 29.17% of the total sales of Product A and 26.67% of Product B. In like manner the proportion is shown for each territory. The procedure remains the same regardless of the number of products, territories, and sales factors involved.

Territory		Product A
1	5 × 30 = 150 1 × 25 = 25 6 175	175 ÷ 6 = 29.17%
2	5 × 40 = 200 1 × 35 = 35 6 235	235 ÷ 6 = 39.16%
3	5 × 10 = 50 1 × 20 = 20 6 70	70 ÷ 6 = 11.67%
4	5 × 20 = 100 1 × 20 = 20 6 120	120 ÷ 6 = 20.00% 100.00%
Territory		**Product B**
1	1 × 30 = 30 2 × 25 = 50 3 80	80 ÷ 3 = 26.67%
2	1 × 40 = 40 2 × 35 = 70 3 110	110 ÷ 3 = 36.66%
3	1 × 10 = 10 2 × 20 = 40 3 50	50 ÷ 3 = 16.67%
4	1 × 20 = 20 2 × 20 = 40 3 60	60 ÷ 3 = 20.00% 100.00%

FIGURE 23. Weighting of Territorial Sales Factors

Selection of Territorial Unit. The territorial units to be used may be counties, trading centers, cities of various population limits, states, or prescribed market areas. For products widely sold, such as hoisery and light bulbs, the small unit serves best. For such products as machine tools, larger units are desirable. Moreover, the methods of distribution employed and the lines of organization within the sales department must be considered in selecting the territorial unit.

Market Potential Indices. Some companies will find themselves in the position of being able to develop indices based on what might be described as very specialized information. For example, the authors know of the plan adopted by a manufacturer of felts for use in paper mills. In this particular case, a trade directory was available which provided data as to the number and type of paper machines used by each paper manufacturer. Moreover, government and trade association data were available as to industry statistics. Using such information, in conjunction with knowledge as to the life of a felt and the activity of the companies, a very accurate market potential was developed.

Most businesses, however, ordinarily must use one of the published indices, and allocate the total sales to each territory on such a basis. Some of the more commonly used ones, with brief comments about them, are as follows:

1. *McCann Index.* This index is a weighted average of these four factors:
   a) Bank deposits.
   b) Number of income tax returns.
   c) Number of wired homes.
   d) Circulation of four magazines.
2. *Curtis Index.* This index is based on the circulation of three magazines: *Country Gentlemen, Ladies' Home Journal,* and *Saturday Evening Post.* Since the circulation is divided by states, the percentage for each state is used as an index for that state.
3. *Crowell Index.* This index has as a foundation the census of distribution and is adjusted by data relating to automobile registrations and income tax returns.
4. *Batten, Barton, Durstine and Osborn Index.* The number of retail outlets, population, and income tax returns are given equal weighting in this index.
5. *International Magazine Index.* In the construction of this index, trade areas have been established, and each such area has been measured by a number of factors such as population, buying power, etc. It becomes a matter of assembling all such potentials in accordance with the particular company's own sales territories.

Customer Analysis. The analysis of market potentialities may extend to customers as well as to territories. There are frequently many possible choices of customers and the problem is to find that selection of customers which, in the long run, will prove most profitable. In brief, the work of sales planning raises the question not only of where to sell but also as to whom to sell.

Customers may be classified in numerous ways; for example, a classification by industry might include the automobile, furniture, paper, and building industries. A classification by types of retailers might include department stores, chain stores, mail order houses, hardware stores, drug stores, and specialty shops. A classification by size might be based upon volume of annual purchases, etc.

The method of approach to the problem of analyzing customer sales potentialities may be suggested by such questions as the following:

1. What classification and subclassifications of customers should be made as a logical basis for analyzing customer possibilities?
2. What trade and industry groups offer the most profitable field?
3. What is the immediate outlook for each of the trades and industries to which the company may sell?
4. What are the potential purchases of each class of customers?
5. What share of such purchases may the concern expect to secure at various price levels?
6. What is the cost of selling to each class of customers?
7. How much must a customer buy to make his account profitable?

While such questions as the above can seldom be answered with complete accuracy, they are sufficiently important to justify intensive study. By careful research, testing, sampling, etc., it is usually possible to answer these questions with reasonable accuracy.

Uses of Territorial and Customer Analyses. Such analyses as described in the preceding pages have the following important uses:

1. Definitely to locate the markets.
2. To measure the size of the markets.
3. To direct the sales effort in accordance with the market potentials.
4. To detect disproportionate distribution of sales effort.
5. To detect unsatisfactory relationship between sales effort and sales results.
6. To provide the sales force with a guide for its efforts.
7. To measure actual sales results by sales opportunities.
8. To determine the most efficient lines of internal sales organization; that is, to determine whether such organization should follow product, territorial, or customer lines.

Uses Illustrated. Reverting now to the illustration on pages 98 and 99, Figure 23 shows the percentages of sales of Products A and B which should be made in each territory if the territorial potentials are fully exploited. Figure 24 gives a comparison of the company's actual sales (figures assumed) with these territorial potentials. Here it is apparent that, in Territory 2, the sales of Product A do not constitute that share of the company's total sales which they should; and, in Territory 1, the sales of Product B are well below the share of the total sales which they should be. Product A is being neglected in Territory 2 and Product B in Territory 1.

Either an insufficient amount of sales effort is used in these territories on these products or else the effort is inefficiently applied.

Territory 3 is providing more than its proportionate share of the sales of Product A; and Territories 2 and 4, more than their shares of Product B. While those responsible for these territories can hardly be discouraged in this performance, yet it is entirely possible that a disproportionate amount of selling effort is being applied to Products A and B in these territories. Assuming that the company is now securing its share of the industry's total sales of Products A and B, then it is obviously getting more than its share of Product A in Territory 3 and of Product B in Territories 2 and 4. In the long run an individual company can seldom get a decidedly excessive share of business in one territory without excessive selling costs. There are always exceptions to such a general statement; however, the point to be emphasized is that the net profit will usually be higher when selling effort is properly adjusted to market potentialities.

	Share of Total Market Potential Represented by Each Territory (See Figure 23)	Percentage of Total Company Sales Now Made in Each Territory
	PRODUCT A	
Territory 1	29.17%	30%
Territory 2	39.16	30
Territory 3	11.67	20
Territory 4	20.00	20
	100.00%	100%
	PRODUCT B	
Territory 1	26.67%	20%
Territory 2	36.66	40
Territory 3	16.67	17
Territory 4	20.00	43
	100.00%	100%

FIGURE 24. Comparison of Actual Sales with Market Potentials, by Territories

In the case at hand, the question may be raised as to whether the net profit would not be increased by shifting sales effort from Product A in Territory 3 and Product B in Territories 2 and 4 to Product A in Territory 2 and Product B in Territory 1. By such a shift the same sales volume should be secured at a lower selling cost.

Figure 25 illustrates an analysis of sales by classes of customers. It is assumed here that the company sells to three classes of customers which are designated as Trade Classes X, Y, and Z. This chart shows the proportion of the industry's sales which are made to each trade class and compares it with the company's actual experience.

	Share of Total Market Potentiality Represented by Each Trade Class	Percentage of Total Company Sales Now Made to Each Trade Class
	PRODUCT A	
Trade Class X	20%	10%
Trade Class Y	30	50
Trade Class Z	50	40
	100%	100%
	PRODUCT B	
Trade Class X	40%	40%
Trade Class Y	30	40
Trade Class Z	30	20
	100%	100%

FIGURE 25. Comparison of Actual Sales with Market Potentials, by Trade Classes

Here the situation is analogous to that of territories. The company is neglecting

Product A to Trade Classes X and Z
Product B to Trade Class Z

and overemphasizing

Product A to Trade Class Y
Product B to Trade Class Y

If, now, the sales of each territory are subclassified by trade classes, it will be possible to ascertain the neglect and overemphasis of individual trade classes within a territory and of territories in relation to trade classes. Such refinement localizes the points of weakness.

Appraisal of Competitive Conditions. One of the most difficult problems in connection with the sales budget for some concerns is the appraisal of competitive conditions. The nature and importance of competition at any particular time can usually be determined with reasonable accuracy but the turn which such competition may take in the future is often difficult to predict. This is especially true where design, style, and price are important factors in immediate sales results.

Evaluation of the competitive factor depends largely upon a thorough knowledge of what is going on in the industry. The matter can never be reduced to mathematical accuracy.

Probably the most useful suggestion is to make certain that the avenues are cleared by which information flows directly and quickly from the field force to the central planning group. Salesmen, branch and district executives, and others on the direct firing line sense the competitive situation quickest. If the information secured in this manner is systematically collected and reviewed, and if to this is added the data available in trade and business papers and the knowledge acquired through the contacts of executives, a basis for evaluation of the competitive factor may be reached.

In analyzing the competitive factor, the line of inquiry is suggested by the following considerations:

1. General character of competition—that is, whether it is of a cutthroat or cooperative type.
2. Extent of monopoly existing and bases for such monopoly; for example, patents, trade names, advertising, processes of manufacture.
3. The basis of competition—that is, whether the chief competitive factors are location, service, price, brands, patents, goodwill, or personality of executives.
4. Likelihood of price wars.
5. Development of new products.
6. Number of competitors.
7. Number of years each has been in the business.
8. Financial strength of each competitor and the trend of this strength through recent years.
9. Present total volume of each competitor and trend of volume during recent years.
10. Territories and customers covered by each competitor.
11. Policies of each competitor relative to sales, advertising, products, prices, and channels of distribution.
12. Extent of mail order and chain store competition.
13. Extent of foreign competition.
14. Possible methods and cost of overcoming competition.

In the final analysis the adjustments, if any, which should be made in sales budgeting for the competitive factor must be based largely on the judgment of the general executives. Indeed, it is often doubtful whether or not any allowance should be made for the competitive difficulties of particular territories or customer groups, as such adjustment tends to perpetuate unfavorable sales trends. With concerns of wide coverage, however, there is the possibility that the intensity of competition may be continuously greater in large markets and lesser in small markets than the average of the country generally. Where such a condition exists, proper adjustment may be desirable.

Sources of Market Information. In addition to the indices already mentioned there is a vast amount of information available to those charged with the responsibility for market research and analysis. First of all there is the company's records of its own past experience. If a company's records are in charge of an intelligent and alert controller, they will constitute the most valuable source of data relative to the sales program. They will show what sales have been made, how, and where; the cost of making the sales; the relation of costs to results; the success and failure of past policies; and the significant sales and cost trends. While such records reflect past performance, they also provide much valuable information as to the condition of markets and to some extent they signal market possibilities.

Next, there is available a great variety of external data from such sources as:

Federal government.
Financial, industrial, and trade associations.
Financial magazines and newspapers.
Statistical services, and trade and industrial magazines.[2]

Responsibility for Market Research and Analysis. There is considerable difference of opinion as to who should assume the responsibility for market research and analysis and the practice varies greatly in different concerns. The usual practice in American business today is to place the market research and analysis function under the sales executive. However, other companies have a separate market research department reporting directly to the chief executive; and in some cases the activity is placed under the chief accounting official. Generally speaking, the need for a clear understanding of the marketing problems will often be the basis for making the function a sales responsibility. The advantages to be gained through centralization of all record and statistical work under the controller can still be secured through occasional procedural reviews and the assignment of a *functional* responsibility to the controller.

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[2] For details, refer to P. H. Nystrom, *Marketing Handbook* (New York: The Ronald Press Co., 1948), pp. 1252-54.

Summary. In conclusion, too much emphasis cannot be placed upon the importance of getting and using market information as a basis for sales budgeting. There can be no intelligent budgeting without it. One of America's leading market counselors recently stated, "During the past few years we have studied and analyzed both the plans and the results of dozens of sales and advertising campaigns—campaigns that succeeded and campaigns that failed.

"Detailed study of the latter indicates that at least 80% of those that fail do so—not because of a faulty plan, or poor execution—but because they were builded upon a foundation of assumption, guesswork, or half-truth, instead of on sound fact."

A very successful manufacturer once stated, "I hate figures and statistics, but I will never take a step without them." Another has said, "Get the facts, or the facts will get you." These statements emphasize the importance of taking the time and pains to get the market facts before developing the sales budget.

Sales Policies

Establishing Sales Policies. Once the available facts are all in, past sales experience thoroughly analyzed, the outlook for general business conditions carefully considered, the market potentialities fully explored, and the matter of products, prices, agencies, channels, and sales methods thoroughly reviewed, the sales policies must then be definitely formulated, the detailed program developed, and both the policies and program made known to the organization at large.

Clearly defined policies are essential to success in any phase of management but nowhere are they more important than in sales management. They should serve as a foundation for the detailed sales program.

It is desirable at this point to distinguish clearly between policy and principle. A principle is a standard of action, based upon permanent considerations, which should be continuously maintained. Honesty, fair treatment of customers, and integrity in advertising are matters of principle. They are matters of permanent and fundamental concern, never to be changed. Policies, on the other hand, represent a line of action which has been determined upon to meet conditions as they exist. Policies not only *may* be changed, but *should* be changed to meet changing conditions.

A concern may, as a matter of principle, be entirely honest in its advertising. As a matter of policy it may decide to depend entirely on direct mail as a medium of advertising. As conditions change, it may alter this policy by dividing its advertising effort between direct mail and periodicals of national circulation, but the principle of integrity in advertising would still apply.

Policies should be established relative to such major considerations as territorial expansion and selection; customer selection; types and quality of products and service; prices, terms, and price control; agencies and channels; selling methods; types and extent of sales promotion; and general lines of sales organization and responsibility.

How Far to Project Sales Policies. The question may be raised as to how far into the future the sales policies can and should be projected. Since the policies are general rules of action to guide the entire organization, they cannot serve their purpose if changed too frequently. Nothing is more destructive of confidence in management than a vacillating policy. On the other hand, there must be courage to change policies when conditions demand or when experience proves the need. Just how far ahead the policies should be projected depends upon the nature of the business and the particular policy in question. A manufacturer with a national sales program may adopt the policy of maintaining local service and repair agencies. This may constitute an important factor in the sales and advertising program. Such a policy cannot be changed frequently. The same firm may, however, change its credit policy or terms of sale with less hesitation. Again, a retail furniture store operating in one city may follow the policy of handling a high quality of merchandise. Its sales program may be built upon this policy. Such a policy is not subject to frequent revision and to be effective must be projected well into the future. The same concern might, however, quickly abandon its policy of selling large institutional customers upon finding the business of such customers unprofitable.

There is always a strong temptation in sales management to yield to temporary expediency rather than to adhere to definite policies. The chance to get immediate orders is tempting, whereas the benefit of strict adherence to policies often seems remote. This emphasizes the necessity of well-defined policies and their continuous enforcement.

Chapter 9

COMPLETING THE SALES BUDGET OR FORECAST

Developing the Detailed Sales Program. The preceding three chapters have reviewed the major elements in developing a sales program. They were:

1. The general approach to the problem.
2. Analysis of past sales performance.
3. Review of secular, seasonal, and cyclical sales trends.
4. Other factors:

    a) Product selection.
    b) Pricing policies and methods.
    c) Channels of distribution.
    d) Method of sale.
    e) Market analysis.
    f) Sales policies.

With such a background, the next logical step is the development of the detailed sales program necessary to make the policies effective, and the transmission of this program to the organization at large.

The development of the detailed sales program involves such considerations as:

1. The basic method of estimating sales.
2. The terms in which the program is to be expressed.
3. The classifications upon which the program is to be developed.
4. The data to be included (i.e., whether the program shall extend to both orders received and shipments).
5. The length of the period for which the sales program should be projected.
6. The revision of the sales program.
7. The recording of the sales program.
8. Functional responsibilities in connection with the sales forecast.

Methods of Budgeting Sales. Although there are numerous approaches to the problem of sales forecasting, these variations may be conveniently grouped into four methods:

1. Sales department estimates.
2. Survey of executive opinion.
3. Statistical methods.
4. Combined methods.

Each of these means will be briefly reviewed.

Sales Department Estimates. The use of the sales department estimate as to the future outlook is perhaps the most common means of arriving at forecast sales. In its application, there are several alternatives. One plan commences with the securing of estimates from *each salesman* as to the probable future sales in his territory. This estimate is usually by class of product, and very often is detailed by customer. Quite frequently the salesman is provided with a record of past sales as a guide. He may make the estimates himself on forms provided specifically for the purpose, or he may prepare the estimates in consultation with the area or branch manager. In this latter case, the manager has a better opportunity to evaluate in detail the reasons for any abnormal changes. In any event, as the estimate progresses from the salesman upward through the supervisory force to the chief sales executive, it is subjected to more or less careful scrutiny. The division managers and sales managers examine the estimates in the light of past performance and their own ideas as to future demand. The above method has been called the "grass-roots" approach because the estimate originates with the representative on the sales firing line.

Some companies do not feel that it is necessary to ask the salesmen for their opinions. Rather, the knowledge of the sales executive group is used. Through checking and cross-checking between division managers, product sales managers, and general sales managers, it is believed that a reasonable answer is secured. Of course, if the estimates are made at too high an executive level, the benefit of the knowledge of those who know local conditions is lost.

In instances where relations are close between a company and its outlets, estimates are secured directly from the jobbers and distributors.

The use solely of the estimates of the sales department may have these advantages or disadvantages:

Advantages:

1. Places responsibility for the forecast with those who must produce the sales results.

2. Uses to the utmost the entire knowledge of the men closest to the sales picture.

Disadvantages:

1. Estimates by salesmen tend to be too optimistic when the level of business activity is high, and too low when business is poor.
2. Sometimes requires extensive time of sales force with resulting loss of selling time.
3. Does not give proper weight to broad economic trends which the sales force does not recognize, or fails to evaluate.
4. Results in low estimates, so as to permit a record of good performance, when the same data is used to set sales quotas.

However, recognition of the disadvantages permits the development of means to minimize them.

Survey of Executive Opinion. Another common and simple method of developing a sales forecast is that obtained through a weighting or combining of the views of the top executives. Under such a system, the company brings together the sales, production, research, financial, and administrative executives to secure broad coverage of experience and opinion. Each executive may make his own independent estimate by means known to himself, or the group may meet and discuss the prospects and test the reasons behind each opinion.

The sales forecasts may be averaged, or the president may review each and make the final estimate. A presidential review may take into account his experience as to the relative accuracy of each executive in making sales estimates.

It can be seen that such a procedure has the advantages of wide coverage of viewpoint and perhaps simplicity. However, unless the executives are inclined to be analytical, the answers tend to be based largely on general guesses or opinions and somewhat less on facts. Moreover, in many cases the breakdown by product lines or areas is either nonexistant or rather sketchy.

Statistical Methods. A third general method is the use of statistical techniques as discussed in Chapter 7. This might involve the correlation of company sales with some external factor such as population or consumer income. It might also include the development of long-term trends, seasonal patterns, and cyclical movements.

The use of correlation techniques and other methods permits taking advantage of the opinion of other forecasters. A pitfall, however, is the tendency to rely too much on statistical methods without the independent thinking that is so necessary.

Combined Methods. A sound approach to sales forecasting is through the use of several methods. If answers developed by statistical techniques, by the estimates of the sales department, and by a survey of executive opinion are individually in somewhat the same area, then there is some reason to be more confident of the figures. Certainly, knowledge that statistical methods or careful analysis of past sales performance is to be brought into play will tend to force the executives to be more careful in their estimates. It is in this area that the chief accounting official can be of great value in seeing that the necessary analyses are made, and that the estimates are subjected to a critical review. This approach is fundamental because the sales budget is usually the basis of all other budgets.

It is to be further noted that the approach to sales estimating can take one of two ways: It may begin through estimating the sales of each customer, territory, salesman, etc., and integrating these individual figures into a composite program for the company as a whole. Or it may begin by a determination of the total planned sales volume and the subsequent apportionment to individual territories, products, salesmen, etc.

Illustration of Combined Method. The results obtained by one method may be checked against those of another, with a final estimate based on further study. To reduce this to a very simple illustration, the following figures may be assumed:

Sales of last period	$1,000
Executives' decision as to volume to be secured for next period (8% increase)	1,080

SALESMEN'S ESTIMATES

Salesman	Sales of Last Period	Estimate for Next Period	Per Cent Increase
A	$ 500	$ 575	15.0
B	300	336	12.0
C	200	220	10.0
Total	$1,000	$1,131	13.1

Here the salesmen's estimates are more optimistic than appear justified by the expected trend of general conditions. Assume now that A's situation is reviewed and found to be entirely too optimistic. His sales are already large, his territory is fully exploited, and the outlook for some of his largest industrial customers is not as favorable as for business generally. It is not at all likely that his volume can come up to even the increase expected in business generally. Instead of a 15% increase, he will do well, in the face of this situation, to secure a 5%

or 6% increase. To a lesser degree, the same situation obtains for Salesman B. Here, however, there are certain products which have been neglected and with proper emphasis on these his increase should reach 10%. Salesman C, on the other hand, has failed to cover his customers thoroughly and to push all products. His sales are low and with proper effort can be increased by 14% instead of the 10% which he estimates.

As a result of combining the judgment of both executives and salesmen, and bringing to bear all statistical aid, the following estimates are developed:

Salesman	Per Cent Increase	Estimate for Next Period
A	6.0	$ 530
B	10.0	330
C	14.0	228
Total	8.8	$1,088

Here it is apparent that both salesmen and executives were wrong in their original estimates. The illustration is perhaps oversimple. The analysis must usually extend to individual products, customers, etc., but the basic idea of harmonizing the two views is sound.

Personal Factor Must Be Considered. The final sales program, to be of practical use, must represent a compromise between sales possibilities—as indicated by statistical analysis—and individual capacities of salesmen and sales executives. Individual capacities are limited and the sales program must be adjusted to such limitations. It is one thing to ascertain statistically what a territory should produce in sales volume and quite another to estimate what a given salesman or district manager, if placed on that territory, will immediately produce. The former is an impersonal factor, the latter a personal factor. Both factors are important and the two must be combined in the development of the final program. Time is required for the training and development of personnel, weaknesses are constantly being revealed and must be corrected, and temporary adjustments are often necessary. There is seldom a time when the sales organization is operating as desired in every quarter. The standardization of operations is more difficult with sales than with production.

Not only must the personal element be duly considered in sales planning but also the intimate knowledge of salesmen and sales executives must be fully utilized. The relative importance of these factors in an individual concern largely determines the precise method to be followed in formulating the final program.

Terms in Which Sales Budget Is to Be Expressed. The sales budget should be developed and expressed in terms of physical units, such as tons, dozens, pieces, yards, etc., as well as in dollar amount. This is necessary in order to fully coordinate the sales program with the purchasing and production programs which must be expressed chiefly in terms of physical units. Moreover, this makes possible the separation of the price and physical volume factors. This separation assists later in the analysis of variations between the budget and the actual results.

There is an exception to this rule in certain concerns, particularly merchandising, where the lines are so varied and numerous as to make the expression in units virtually impossible. Here the entire program—sales and purchases—may be expressed in dollars. This is true, for example, in drug sundries. Even in such cases it is often possible to use physical units for a considerable number of items of major importance.

Even in some manufacturing concerns, the number of items made and sold (when different styles and sizes are considered) runs into the thousands. While a large number of items complicates the problem of sales budgeting, it will often be found that the bulk of the money volume is in a comparatively few items. These major items can be grouped separately and resolved into physical units. Minor items can then be expressed in terms of money volume only. For example, a certain manufacturer of small tools makes and sells over 6,000 items. Detailed plans in terms of physical units are made for only 400 of these items, but these 400 items constitute more than 80% of the total money volume of the business. A program of this type usually extends itself gradually to more and more items until it covers the major part of the business and often serves to eliminate many slow-moving and unprofitable items.

Classifications upon Which the Sales Budget Is to Be Developed. No general statement can be made as to the extent to which sales should be classified and subclassified in developing the sales budget. In one case it may be necessary to plan the sales of each salesman to each of his customers and to show the volume of each of several classes of goods which he is expected to sell to each customer. Again, it may be necessary only to plan the volume of each class of goods to be sold in each territory. Obviously, the extent to which such classification should go depends entirely upon the circumstances of the individual case. Classifications commonly useful are by:

Products or commodities
Territories

Customers
Channels of distribution
Organization division (i.e., branches, stores, departments, etc.)
Salesmen
Terms of sale
Method of sale
Method of delivery
Size of units of product (e.g., full cases, broken lots, etc.)
Size of orders

Each of these classifications lends itself to numerous subclassifications. For example, the sales of each product may be further classified by territories, customers, channels of distribution, etc.

The sales and accounting executives must strike a balance between the value of refining the information relative to past and potential sales and the cost of securing the information.

Budgeting Orders Received as Well as Shipments. In many concerns there is a considerable lapse of time between the date of receiving orders and making shipments. Sales are usually recorded at the time of shipment or delivery. Since the sales budget usually serves as a basis for financial, purchasing, and production plans, and since these are more directly related in point of time to orders received than to shipments, it is frequently desirable to extend the detailed estimates to cover orders received as well as shipments. Provision should be made for cancellation of orders.

Sales Deductions. The detailed sales budget should cover all major sales deductions common to the business, such as returns, allowances, freight allowances, extra discounts which are not considered as price adjustments, special service allowances, etc. Each of these should be carefully estimated on the basis of past experience and special studies as to future expectations. This is desirable not only for the purpose of determining net sales, but also as a means of exercising control over these deductions.

Length of Sales Budget Period. The length of the period in advance for which the budget generally should be made was discussed on pages 22-23. The sales budget should be projected only so far as it is possible, with intensive analysis and study, reasonably to predict what can and will be sold with a given amount of sales effort. The fact that this can never be foretold with 100% accuracy does not remove the value of the planning effort. A concern must seek the one program which offers the most promise, and this can be found only as effort is made to predict the results of alternative methods. The planning effort loses its value, however, when it is projected to a point where probable conditions become too uncertain to serve as a basis for intelligent action. The factors which usually determine the length of the sales budget period are:

1. *Seasonal Nature of Production, Sales, or Products.* Here the budget period usually conforms to the season. Christmas cards, ice skates, and electric fans serve as illustrations.
2. *Style.* Where style is a major factor, the sales program may be timed to the period of normal style change. Women's clothing and shoes are illustrative.
3. *Manufacturing and Buying Customs.* The custom of producing new automobile models annually and of presenting new furniture semi-annually illustrates the influence of manufacturing and buying customs on sales plans.
4. *Stability of Markets.* Established and stabilized markets permit of longer sales planning periods than those in which there are frequent changes in products and frequent fluctuations in volume and price. Baking soda and paper clips illustrate products of stability.
5. *Length of Production Period.* If the normal production period is long and if the product is stored following production, then the sales program must cover a period from the time of acquiring raw materials to sale of finished product.
6. *Extent of Past Experience.* If the products are new or if data on past experience are meager, the sales program may be developed for short periods until more information is available.
7. *Views or Outlook of Executives.* The sales program must at times be made to conform to the views or outlook of major executives. If, for example, by custom they think in terms of quarters, it may be desirable to develop the sales program accordingly.
8. *Stability of General Economic Conditions.* As with all budgeting, the sales program can be projected further in times of comparative stability of economic conditions than in times of marked uncertainty.

The periods most usually selected are the quarter, half-year, and year. These are then broken down into months or corresponding periods such as the four weeks' period. This permits of a closer coordination with buying, production, and finance.

The length of the sales planning period may vary for different products and territories in the same concern. Moreover, tentative programs may be developed for a year, then revised and definitely established for shorter periods. In some cases, as, for example, with utilities, the general sales program must be projected for quite long periods as a basis for planning important capital expenditures.

Revision of Sales Program. When unforeseen and unexpected conditions arise which indicate that the sales program cannot be executed as planned, the program must be promptly revised; otherwise it will not serve either as a basis for coordination or as a means of control of sales operations. Since other operations such as production, purchasing, and finance are based largely upon the sales budget, it is particularly important that the sales program be promptly revised to accord with changed conditions.

Recording the Sales Program. To make the work of budgeting effective, the program must be clearly, definitely, and completely recorded. This applies to both the original program and subsequent revisions. Carelessness in recording the program can easily defeat the entire purpose of budgeting. The plans of an architect must be reduced to blueprints and many copies made to guide and unify the work of the builders. Without such guidance utter confusion would result. By the same analogy, the sales program must be definitely charted. Salesmen, supervisors, department heads, branch managers, and all sales executives should have at hand their charts and schedules, in writing, showing definitely the sales program or at least their respective parts of the program, and showing when and how the program is to be executed.

Reducing the sales program to a definite written form has the following specific advantages:

1. It reveals errors, omissions, and conflicts in the program.
2. Knowing that the plans are to be put in writing and placed before a critical organization, those who formulate them will do so more carefully.
3. Written programs, if clear and complete, remove the chance to evade responsibility.
4. With the task clearly stated in writing and constantly before him, the salesman or minor executive, knowing he will be held accountable, will work harder than if his program were indefinite. Moreover, such written plans unconsciously serve as a guide to action.
5. With the program reduced to writing, it is more likely to be executed exactly as planned.

Circumstances must dictate the exact form which the written program is to take. This is not particularly important so long as the statement is clear and complete. Individual salesmen and executives need be given only that part of the program which relates to their own responsibility.

Importance of Accuracy in Sales Estimates. Since other parts of the financial and operating program are usually based upon the sales estimates, it is important that these estimates be made as intelligently and accurately as possible within reasonable cost. This does not mean, however, that the value of sales planning is in direct ratio to the possibility of accurate estimates. It may develop that the sales estimates are only 75% correct. Nevertheless, the possibilities were throughly canvassed, the combined intelligence of the organization was utilized in formulating the best sales program for the exploitation of these possibilities, sales effort has been directed in what was generally agreed upon as the most profitable channels, the work of all divisions has been harmonized and coordinated, and controllable expenditures have been made as planned. While results may not have reached expectations, they have unquestionably been better than they would have been had no effort been made to find and follow the most profitable course.

The accuracy with which sales can be estimated depends upon many factors and the peculiarities of industries make the problem somewhat different in each. Established industries with well-defined markets find the task easiest. Industrial products are more difficult than consumers' goods. Style and luxury products offer special problems, although some concerns in this field have had excellent success in estimating. In the packing industry, sales are governed by the movement of livestock to the market. Clothing, which represents a durable type of consumers' goods, is difficult due to the consumer's ability to defer purchases. Changes in consumer attitude come very quickly with modern communications. Railroad and utility equipment concerns find it difficult to estimate when orders for new equipment will be placed and what share they will receive.

The views of executives still vary considerably as to the possibility of estimating sales, but the trend of recent years has unmistakably been in the direction of more careful and accurate estimates. Even when it seems impossible to estimate some parts of the sales volume, other parts can be successfully planned.

The one obstacle which appears most insurmountable is the instability of general business conditions. And this does at times seem to thwart all possibility of successful sales budgeting. It should be remembered, however, that it is in such times of stress that the business navigator must look most closely to his course, scanning every sign of increasing intensity or abatement of the storm.

The Role of the Accountant. A considerable amount of space in this volume is devoted to the subject of sales forecasting or sales budgeting. Obviously, if the accounting function is solely to receive from the sales department an estimate in units of the expected sales, and to extend them at the expected selling price so as to determine the dollar sales volume, then there is little need for any extended discussion. The accountant does not, or should not, make the sales forecast. However, because the sales forecast is basic in a system of budgetary control, it bears repeating again and again that the accounting executive being the skilled analyst of his company, should critically review the sales forecast and trend of actual sales, continually pointing out favorable or unfavorable trends, and suggesting improvements to assist the chief sales executive and the business. Generally, the controller must furnish the figures as to past sales performance. It is he who must analyze the sales estimates to determine their feasibility in the light of sales trends and expected general business conditions.

The duties of the accounting executive with respect to the sales budget in a typical company may be summarized as follows:

1. Continually analyzes past sales performance, charting significant trends and relationships, and bringing essential data to the attention of the chief sales executive for sales control and for integration into the sales program.
2. Supervises the statistical department handling correlation, etc., or becomes familiar with technique, if a nonaccounting function.
3. Prepares the necessary information for aid of sales staff or executives in making forecast, including forms and instructions.
4. At proper time, requests sales forecast from chief sales executive, providing the information needed by the sales department staff.
5. Counsels with those who need assistance in preparing forecasts.
6. Perhaps develops own estimate of sales based on available data, for comparison with that submitted by sales manager.
7. Receives forecast (usually in physical units).
8. Analyzes forecast presented, and clears up questionable matters, such as effect of new products, etc.
9. Applies prices to forecast of physical volume in order to determine dollar volume.
10. Prepares budget of sales deductions, based on trends, etc.
11. Prepares tentative sales budget for review by Budget Committee.
12. Forwards tentative sales budget to responsible departments for use in preparing production, advertising, research budgets, etc.
13. Makes necessary revisions in sales budget after decisions by Budget Committee.
14. Transmits in proper form final approved sales budget to the sales executive for proper action.
15. Analyzes actual and budgeted performance during the year and suggests corrective action.

Chapter 10

OTHER PROBLEMS OF SALES CONTROL

Sales Standards

Individual Sales Responsibility. A sales program, no matter how scientifically designed, will not execute itself. There must be a delineation of individual tasks and responsibilities and reasonable incentives to induce satisfactory performance. In so far as possible, individual responsibilities must be established throughout all levels of the sales organization. This may extend to major executives, divisional and minor executives, and finally to individual salesmen and sales technicians.

One of the cardinal advantages of budgeting is that every person knows his task, knows when and how it is to be performed, and can apply his full effort toward its accomplishment. Uncertainty as to company policies and program is replaced by definiteness and individual responsibility.

Distinction Between Sales Standards and Sales Budget. In the establishment of individual tasks as a part of the general sales program, there is sometimes a conflict between what should be done—that is, what represents satisfactory performance—and what it is actually expected will be done. This problem was discussed in Chapter 2, relative to budgeting generally. It has particular significance in relation to sales budgeting where operations are not fully controllable. It frequently happens that two figures are necessary—one, expressing a standard by which to measure the quality of performance; the other, expressing actual expectation for the immediate period under consideration, and serving as a basis for a unified and coordinated program.

To illustrate, let us assume that the company under consideration has budgeted a total sales volume of $10,000. It has three sales districts with a manager over each, and three salesmen in each district. The figures representing satisfactory performance (standards) and actual expectation (sales budget) are as follows:

	Satisfactory Performance (Standards)	Actual Expectation (Budget)	Per Cent of Expectation to Standard
District A:			
Salesman A 1	$ 2,000	$ 2,000	100.0
A 2	2,000	2,000	100.0
A 3	1,200	1,000	83.3
Total for District A	$ 5,200	$ 5,000	96.2
District B:			
Salesman B 1	$ 1,200	$ 1,200	100.0
B 2	1,100	1,000	90.9
B 3	1,000	800	80.0
Total for District B	$ 3,300	$ 3,000	90.9
District C:			
Salesman C 1	$ 900	$ 800	88.9
C 2	800	700	87.5
C 3	800	500	62.5
Total for District C	$ 2,500	$ 2,000	80.0
Grand Total for Company	$11,000	$10,000	90.9

Here it is assumed that if the performance of every salesman and district manager were to be 100% satisfactory, a volume of $11,000 would be secured. This, however, is hardly to be expected. It is rarely the case that every man in the organization is doing all that he could and should do. There are always weak spots and, in developing the plans, allowance must be made for them. In the case at hand actual sales of only $10,000 are expected or 90.9% of standard. No district, as a whole, is expected to reach the level of entirely satisfactory performance and only Salesmen A 1, A 2, and B 1 are expected to fully measure up to this standard. The expectations for District C and for Salesmen C 3, B 3, A 3, C 2, and C 1 are all well below standard. Corrective effort must be directed to these points. When hope is abandoned for particular men, new personnel must be secured and trained; but this requires time. By the time Districts C and B are brought nearer to satisfactory performance, District A may have slipped back. While the illustration exaggerates the typical case, it serves to emphasize the fact that one set of figures will not always serve the dual purpose of measuring performance and providing a basis for a coordinated program. Actual experience in budgeting soon demonstrates this fact.

The development of individual sales standards is extremely important as a basis for measuring individual performance, rewarding merit, and strengthening the organization; but this procedure must not be confused with the necessity of developing a sales program which will serve as a basis for a coordinated program of purchasing, production, and finance. In the case at hand such a program will be based upon a sales volume of $10,000.

Facts to Be Revealed to Subordinates. The question may arise as to the feasibility of saying to a district manager or salesman that he should produce a volume of $2,500 but that we expect a volume of only $2,000. At some levels this is unnecessary. In the above illustration, for example, it will be necessary only to say to Salesman C 3 that satisfactory performance requires a volume of $800, that every help will be given him to find his weaknesses and to direct his effort more profitably, and that with this help he must bring his volume to $800 or fall from the ranks. He need not necessarily be told that we are doubtful as to his ability immediately to achieve this degree of improvement and are actually planning for a volume of $500 during the coming period.

As the executive ranks are reached, somewhat more information must be revealed. To a degree the minor executives must be taken into confidence. The manager of District C may be told that his work will not be considered satisfactory unless he can bring the volume to $2,500 and the sales of each salesman to the amounts specified; that our study, in which he has had a part, indicates that this can actually be done in the coming period; that plans are actually being drawn for a volume of $2,000 but that these plans are subject to revision and will be revised to provide the $2,500 if he proves his ability to do the task as it can and should be done. It is necessary in some instances to reveal the fact that actual expectations are below standard but that the realization of such a program will by no means be considered good performance. Indeed, it may be made emphatic that a continuation of such performance will call for new executive leadership.

Both Standards and Budget Based Upon Past Performance and Sales Research. The analysis and study of past sales performance and the research into sales possibilities, discussed in Chapters 6, 7, and 8, serve as a foundation for both standards and budget. From such studies decisions must be reached as to the standards of individual sales performance to be established and the actual sales results to be expected during the period under consideration.

Where a high degree of stabilization of markets and sales methods has been developed, one set of figures usually serves for both purposes. Again, where the major problem is one of control of individual effort with little difficulty in coordination, the emphasis may be primarily on the sales standards. In such cases the figures expressive of standard performance may be used as a basis for the budget even though it may be realized that they will be slightly above actual expectation.

Definition of Sales Standards. Sales standards are scientifically developed measures of performance and results which may reasonably be achieved under expected conditions and circumstances. Three points require emphasis: (1) The standards are not guesses; they are the opinions, based upon available facts, of the men best qualified to judge; they are the results of careful investigation of past performance and future possibilities. Unless such study is made, no valuable standards will be available. The setting of sales standards is never an easy task. (2) The standards must be fair and reasonable measures. Nothing is accomplished by saying to a man that his performance will be considered satisfactory only if he accomplishes an impossible task or even one which requires more than average ability for a man of the training and qualifications commonly assigned to such tasks. Such measures will be ignored. (3) The qualification "under expected conditions and circumstances" requires a continuous study of shifting forces in business which are always difficult to determine; however, the value of knowing to a reasonable degree of accuracy what these conditions will be, justifies the time and pains necessary to attempt to ascertain them.

Purpose of Sales Standards. Sales standards provide management with its most important tool of sales control, its only basis for fairly rewarding merit, and its chief stimulating device. As a tool of control they reveal weaknesses in performance which, if properly analyzed as to causes, open the way for correction and strengthening. As a basis for rewarding merit they result in fairer and more accurate relationship between compensation and performance. As a stimulating device they provide each salesman and executive with a goal of accomplishment and with assurance of fair reward.

Nature of Sales Standards. The sales standards may be expressed in terms of effort, results, or the relation of effort to result. For example, a salesman may be required to make 3 calls a day or 15 calls per week. If he makes this number of calls, he meets this particular standard of effort. Again, he may, as a result of these calls, be expected to secure 10 orders for every 15 calls, or a certain dollar volume per call. If he does this, he meets this particular relationship standard. Or, he may simply be asked to secure a certain dollar volume from a given territory, regardless of the number of calls made or the orders and sales per call. If he does this, he meets this particular standard of results.

Again, the standards may involve a relationship between selling cost and sales results. For example, in a retail furniture store, the standard may require that one prospective customer be attracted to the store for every $2 expended in advertising, or that $1 of sales be secured for every 7 cents expended for advertising. If these results are achieved, those responsible for the advertising expenditures are meeting the standards of advertising results.

Illustrations of Sales Standards. While no set of sales standards can be suggested which is universally applicable to manufacturing, wholesaling, and retailing concerns, or to various industries or types of businesses, the following are illustrative of those which are frequently useful.

Standards of Effort

Number of calls to be made per period.
Number of calls to be made on prospective customers.
Number of dealers and agencies to be established.
Number of units of sales promotional effort to be used, e.g., demonstrations, pieces of direct mail sent, etc.

Standards of Results

Percentage of prospects to whom sales are to be made.
Number of customers to whom new articles are to be introduced or sold.
Number of new customers to be secured.
Amount of dollar volume to be secured.
Number of physical units to be sold.
Amount of gross profit to be secured.
Amount of net profit to be secured. (Here net profit is frequently considered as the excess of gross profit over the expenses which are subject to the control of the salesperson or executive to whom the standard is to apply.)
Amounts to be sold to individual customers (especially larger customers).
Dollar or physical volume of individual products or product classes to be sold.
Percentage of gross profit to be returned (where there is a varied line or where salesman has price latitude).
Average size of order to be secured.
Relation of sales deductions to gross sales.

Standards Expressing Relationship of Effort and Result

Number of orders to be received per call made.
Number of new customers to be secured per call made on prospects.
Number of inquiries or orders to be received per unit or per dollar of sales promotional effort expended.

Relation of individual direct selling expense items to volume or gross profit.
Relation of sales administration or supervision costs to volume or gross profit.

Responsibility for Sales Standards. Sales standards should ultimately be set by those executives who are best qualified to judge sales performance. Judgment as to general business conditions and market potentialities must usually rest upon the general executives in conjunction with the chief sales and statistical or accounting officers. Judgment as to detailed sales operations must rest largely with the sales executives.

Revision of Sales Standards. There are some standards of sales performance which can be set with a high degree of exactness. The number of calls which a salesman should make, the percentage of prospects to whom sales should be made, and the physical units which should be sold to each customer are illustrative of performances which frequently lend themselves to accurate measurements. On the other hand, there are many factors in sales performance which are so governed by conditions beyond the control of the salespeople that the standards must be promptly revised to meet important changes in such conditions. Where a salesman is given some latitude in price setting, his gross profit percentage may vary with competitive conditions beyond his control. Strikes, droughts, and floods may suddenly affect the sales possibilities in a particular territory. If the sales standards are to be effective measures of sales performance, they must be promptly revised as conditions change. Careless measurement of performance soon leads to discouragement, resentment, and disinterest in the task.

Use of Sales Standards. As stated above, the purpose of sales standards is to control sales operations, reward merit, and stimulate sales effort. The standards in themselves are of limited value except as they are made effective in the accomplishment of such purposes. To make the standards so effective requires that:

The variations between actual and standard performance be promptly determined.
The causes of such variations be investigated and explained.
The responsibility for the variations be definitely fixed.
The individuals held responsible be given full opportunity to present their explanations.
Prompt action be taken to correct any weaknesses revealed.

The method of compensation shall provide a fair and accurate reward for performance.

Sales Quotas as Standards. The most widely used sales standard is the sales quota. As usually constituted, the sales quota is the amount of dollar or physical volume of sales assigned to a particular salesman, department, branch, territory, or other division as a measure of satisfactory performance. The quota may, however, involve other considerations such as gross profit, new customers, collections, traveling expense, etc., thereby representing something of a composite or collective standard of performance.

The quota does not differ in its purpose and use from other sales standards as discussed above. Its applicability to various types of concerns depends largely upon the extent to which sales and other results are actually affected by the direct efforts of the salespeople involved; and the extent to which such results are affected by other factors such as expenditures for advertising, special sales promotion, styles and acceptability of products, etc. Where the former is the dominant factor, sales quotas constitute a valuable type of sales standard.

Basis of Sales Quotas. Generally speaking, sales quotas are of value only to the extent that they are based upon known facts relative to sales possibilities. They must not be based upon the greed of the company or upon fanciful ideas of what might be done, but upon actual facts relating to past sales, sales in allied industries, population, buying power, territorial conditions, etc. The sales representative should be thoroughly informed as to the method of arriving at his quota and convinced that the amount of sales assigned to him is entirely justified according to the existing conditions. Then, and only then, will he exert his full effort to meet his quota.

The quota should not be thought of primarily as a basis for contests. The salesperson should consider his quota as representing a careful measurement of his basic task rather than a temporary target at which to shoot.

Actual experience with sales quotas, as with all standards, will reveal that sales representatives react to them somewhat differently, particularly at first. Some are stimulated to their highest efficiency, while others are discouraged. Some sales executives place considerable emphasis upon this human element in setting their quotas. In general, however, good men will, in the long run, respond favorably to intelligently devised quotas, particularly when compensation is fairly adjusted to performance.

The objection, sometimes raised, that efforts are lessened after quotas are reached, is seldom valid if performance is properly rewarded. The chief difficulty arises when quotas are exceeded as a result of some fortuitous circumstance in which the sales representative has had no part or for which his share of the credit is uncertain. The solution here usually rests with extreme fairness in handling individual cases and with the development of confidence in the knowledge and integrity of sales executives.

Sales Reports

Reports for Sales Control. Successful control of sales operations requires a continuous review of results and of individual performance. To a limited extent such control can be exercised by the personal supervision of sales executives, but the chief basis for effecting such control is a system of sales reports that provides the significant facts relative to sales performance and an adequate interpretation of these facts in terms of personal responsibility.

The sales reports should present such information as:

1. Sales budget.
2. Sales standards.
3. Actual sales performance.
4. Important variances between sales budget and actual results with explanation of causes.
5. Important variances between actual sales performance and standards with explanation of causes.
6. Selling cost budget.
7. Selling cost standards.
8. Actual selling costs.
9. Important variances between cost budget and actual costs with explanation of causes.
10. Important variances between actual and standard costs with explanation of causes.
11. Sales-cost relationships.
12. Important variances between actual and standard sales-cost relationships with explanation of causes.
13. Special information pertaining to prices, quality of service, balance of appropriations, etc.

The reports may relate to actual sales, orders received, shipments, and unfilled orders; they may include important data concerning sales deductions or cancellations; and they may be expressed in terms of dollars, physical units of product and service, or units of functional service.

Reports should be designed to meet the particular needs of general executives, general sales executives, divisional sales executives, and salesmen. No general statement can be made as to the extent of the information which should be given to each. This depends upon the responsibility assumed, the calibre of the men, the nature of the sales organization, and the methods of sales management employed.

Nature of Sales Reports. Sales executives are prone to disregard figures, particularly reports with a vast amount of statistical data. Accordingly, the controller should modify the report to suit the situation. In some instances, the best method of getting results will be to write a short memo or narrative report, pointing out deficiencies and asking questions about them or suggesting action. Perhaps a personal visit will be feasible. In other instances a chart or graph will effectively get the point across. Where a great many facts must be given, however, statistical comparisons must be presented.

Frequency of Reports. The frequency of any report will depend on the individual requirements of each executive or staff member—whether daily, weekly, monthly, or quarterly. For example, the top executive and general sales manager may want daily a report on sales, orders received, and orders on hand. Again a weekly report may suffice. Furthermore, a report may be wanted daily during a critical period, and less frequently thereafter.

Regardless of the period used, *prompt reporting* is essential. Reports should be regularly scheduled for a definite issue date.

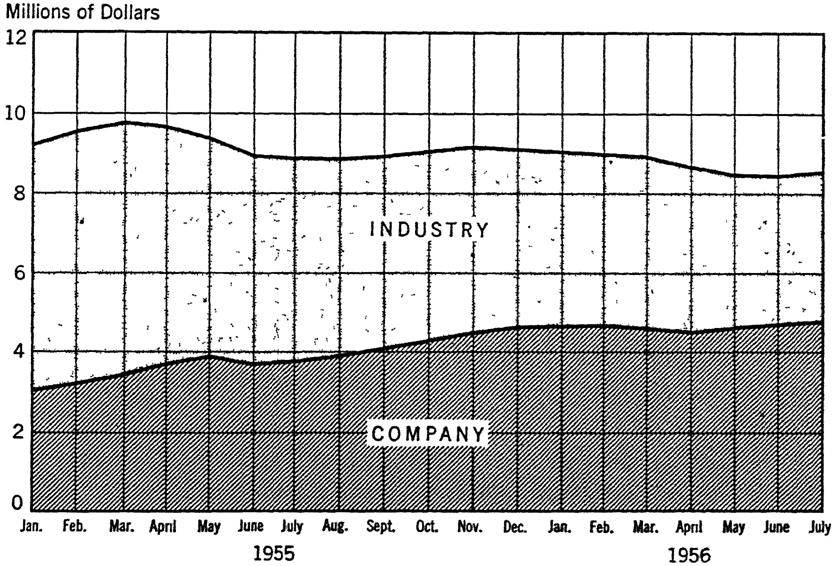


Figure 26. Graphic Comparison of Company vs. Industry Sales

Illustrative Sales Reports. Sales reports must be varied to suit the personality of the reader. Reports to the chief executive as well as the major sales official should highlight the operations. In Figure 26 month-by-month sales of the company are charted in relation to industry sales to reflect the relative position. This can be done, of course, only where industry figures are available from government or trade association sources. Since top sales management is interested in trends, a simple bar chart may be found useful. Sales executives are often interested in a comparison of actual sales with both the budget and the comparable period of the preceding year. Such data can be shown effectively in graphic form as illustrated in Figure 27.

THE APPLIANCE MANUFACTURING COMPANY
COMPARATIVE SALES
This Year, Last Year, and Budget

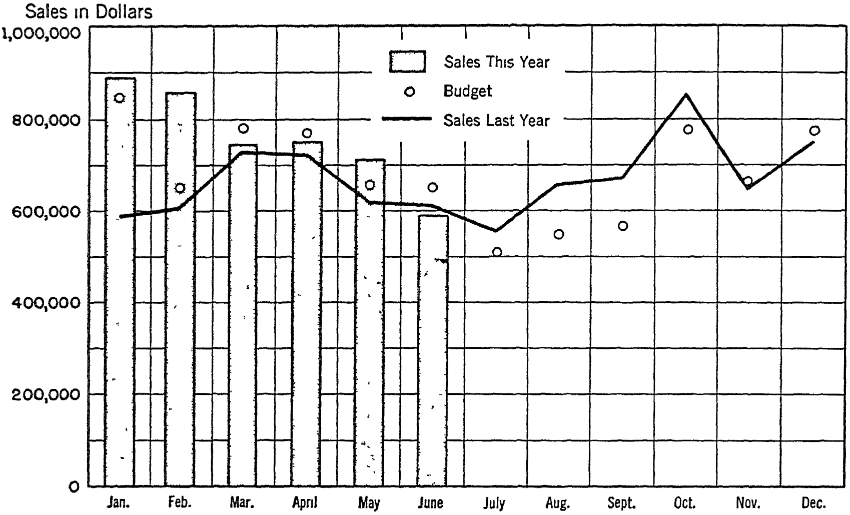
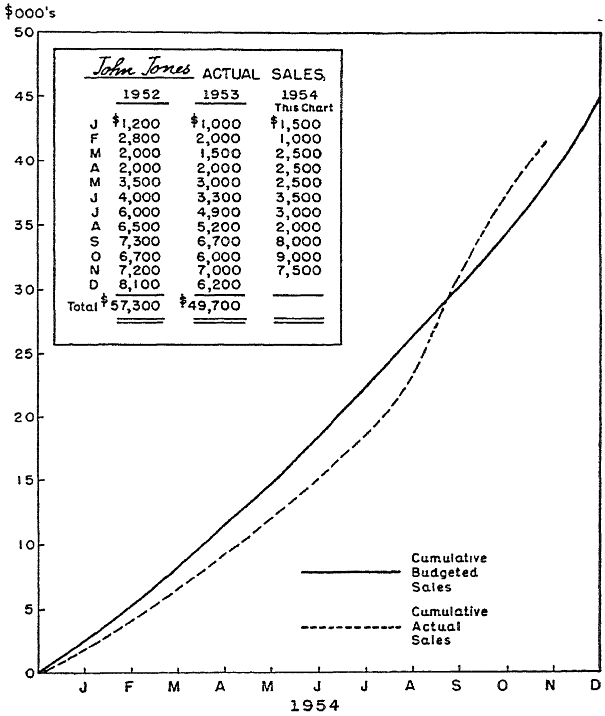


FIGURE 27. Comparative Sales Chart

A simple comparison of budgeted and actual sales by branch, for both month and year to date, showing gain or loss over budget may be helpful. For effective action, of course, the results by each individual salesman must be known.

Under some circumstances it may be found effective to prepare such a report for review by the branch sales manager. He would *discuss* the subnormal, or unusually good, performance with each individual salesman, but would not burden the salesman by leaving the report in his possession. Other companies may find that a salesman could make good use of such a report through individual study. A simple chart showing actual and budgeted performance of a salesman is illustrated in Figure 28.



John Jones ACTUAL SALES

	1952	1953	1954 This Chart
J	$1,200	$1,000	$1,500
F	2,800	2,000	1,000
M	2,000	1,500	2,500
A	2,000	2,000	2,500
M	3,500	3,000	2,500
J	4,000	3,300	3,500
J	6,000	4,900	3,000
A	6,500	5,200	2,000
S	7,300	6,700	8,000
O	6,700	6,000	9,000
N	7,200	7,000	7,500
D	8,100	6,200	
Total	$57,300	$49,700	

FIGURE 28. Salesman's Control Chart

Sales Budget Not a Substitute for Leadership. In concluding the discussion of sales budgeting, it should be emphasized that the planning and control of sales operations can never be reduced entirely to a matter of principles, rules, and procedure. The alertness, foresight, inspiration, and dynamic leadership of sales executives must always be the dominant factors. Intelligent planning and sensitive control of operations are, however, indispensable aids to successful sales management.

Chapter 11

PRODUCTION BUDGET

Problems of Budgeting Production. The preceding chapters dealing with the sales budget are applicable to both trading and manufacturing concerns. This and the four succeeding chapters consider problems peculiar to manufacturing.

The sales forecast is basic to the entire budgeting program. Ordinarily, after the sales budget has been formulated, the next step is the preparation of the production budget, or more specifically the production volume budget. It is the estimate of the physical units which must be produced to meet the budgeted sales. This production volume budget is the first of a series of budgets which deal with the manufacturing operation. Upon it depends the material, labor, and manufacturing expense budgets. Again, this is but further evidence of the interdependence of the program.

Production cannot be budgeted independently of sales and finance; the entire program must be coordinated. For example, the production department may suggest the desirability of a greater degree of standardization of products—fewer styles, sizes, etc. But such elimination of items may have a distinct bearing on sales plans. Again, the production department may desire to level out its program in order to utilize its facilities to better advantage and to provide regularity of employment. But this may necessitate increased or redistributed sales effort, larger inventories, and greater financial demands. The problem is one of coordinating all factors in the direction of the most effective utilization of the total resources available.

The problem of budgeting production differs somewhat as between concerns which manufacture standard commodities for stock in anticipation of sales demand and those which produce to customers' specifications upon receipt of orders. In the former case the problem is to have the goods available when orders are received; in the latter case the problem is to be prepared to produce goods promptly after the orders are received. The basic principles and methods are the same in both cases but in the latter case the plans cannot be projected as far in the future, and more frequent revision is required.

Purpose of Budgeting Production. The production budget serves as a tool of both coordination and control. By its use the production program must be coordinated with the sales and finance programs, physical production synchronized with sales demands, plant and inventory investment properly balanced, and production costs held to predetermined standards.

The use of the budget as a coordination device is fully as important in production as in sales and its use as a control device is even more important. Sales volume can never be completely controlled but production, production costs, inventories, and plant extension can be largely controlled.

While tremendous progress has been made in the direction of scientific management of production, with the result that costs have been reduced, wages raised, hours shortened, working conditions improved, and output increased; yet hundreds of cases of overexpansion of production facilities, excessive inventories, and misdirected production still appear. Moreover, American industry has not succeeded in developing a satisfactory degree of stability of production and employment. The remedies for these defects, at least in so far as they relate to individual concerns, lie largely in the direction of intelligent planning.

Steps in Budgeting Production. The steps required for the complete budgeting and budgetary control of production may be outlined as follows:

1. Determine the period of time to be used as a basis for the production budget.
2. Ascertain what physical quantities should be produced to meet the sales budget and to provide properly balanced inventories.
3. Determine *when* the goods should be produced.
4. Determine *where* the goods should be produced.
5. Determine the manufacturing operations required by the production.
6. Establish standards of production performance for use in measuring production efficiency.
7. Develop a program of material, labor, service, and equipment requirements.
8. Establish production cost standards.
9. Translate the production program into standard or estimated cost to effect financial coordination.
10. Use the production budget for purposes of cost control.
11. Make necessary revisions of the production budget.

The first five steps are discussed in considerable detail in this chapter; the next four, dealing with standards and costs, are reviewed generally, but are considered in more detail in later chapters; and the use of the budget for control purposes, together with problems of revision, is covered in succeeding chapters.

Production Budget Period. In general, the production budget period should conform in length to the sales budget period; however, special circumstances may dictate a longer or shorter period. Since sales can never be projected with absolute certainty, the production budget period should be as short as possible, consistent with reasonable efficiency in the production program. If, for example, goods are being manufactured for stock, if no special equipment is required, and if labor, materials, and supplies are readily available, the production budget period may be comparatively short. If, on the other hand, models and patterns are being changed yearly, if annual equipment changes are necessary, if yearly material contracts must be placed, or if stability of employment is a paramount factor, the period must be longer.

Undoubtedly, the commonest practice of concerns manufacturing for stock is to prepare a tentative production program for one year, with a definite budget for a shorter period—usually one to three months. Where goods are made to order, no definite period can be set. Here the budgeting of production must be a continuous process. As orders are received they must be merged with the existing program by a process of progressively dropping completed orders and adding new ones. Many concerns, producing both for stock and to order, are compelled to employ both methods.

Factors of particular consequence in selecting the production budget period may be summarized as follows:

1. The length of the sales budget period.
2. The length of the normal production cycle.
3. The necessity for changing patterns, models, fixtures, and equipment; and the length of time involved in such changes.
4. The length of time necessary to secure materials and supplies.
5. The difficulty of securing and maintaining a skilled labor force.
6. The importance of stability of employment.
7. The extent of the dangers attendant upon inventory accumulation.
8. Stability of general business conditions.

Physical Quantities to Be Produced. When the sales budget is expressed in physical units, only a simple computation is necessary to reveal the physical quantities that must be produced to supply the customers and to provide adequate inventories. For example, if it is expected that 60 units of Product A will be on hand at the beginning of the production budget period, if 100 are to be sold during the period, and if 40 are to be in the inventory at the end of the period, then the production budget must provide for the delivery to stock of 80 units. If this procedure is followed for each product, the total physical production requirements will be known.

If the sales budget is developed only in terms of dollars, then the translation into physical units must be based on past experience. Thus, if Product A has in the past represented 5% of the sales volume and if the current sales budget is $1,000,000, then an output amounting to $50,000 of Product A is called for. This must then be converted into physical units on the basis of budgeted prices. In rare instances the conversion to production requirements must be expressed in such terms as labor hours, machine hours, or plant operating hours; usually, however, the final expression should be in terms of units of specific products or classes of products.

The quantities may be tentatively set for the full budget period, as, for example, the season or year; with more definite determination for a shorter period, such as the month or quarter.

Before computing the quantities to be produced, it is necessary to decide upon the quantities which are to be in the inventory at the close of the production budget period. This decision must be based upon such factors as:

1. Margin of safety necessary to insure proper service to customers.
2. Necessary protection against material and labor shortage and labor trouble.
3. The cost of maintaining inventories.
4. Danger of obsolescence.
5. Expected price trends.
6. Financial strength of the company.

The consideration of quantities in inventory concerns not only finished goods but also work in process, parts, and partially assembled goods. It frequently happens that quick service can be given to customers if goods are processed up to a certain point and stocked at that point; then when orders are received, completing operations can be performed quickly and goods shipped on schedule. While final operations may be short in point of time, they may represent considerable cost, and this plan of holding back the inventories may result in substantial savings in inventory investment. To illustrate, assume that Product A is made up as follows:

Parts Included	Time Required to Produce	Number of Parts Used in the Finished Product	Unit Cost of Parts	Total Cost
A 1	60 days	1	$ 5	$ 5
A 2	30 days	3	10	30
A 3	2 days	5	15	75
Assembly	1 day			10
Total cost of finished product				$120

It is obvious here that customers can be supplied if a relatively small number of finished units are on hand, provided an adequate supply of Parts A1 and A2 is available. One thousand units of Part A1 would represent an investment of only $5,000, whereas 1,000 finished units require an investment of $120,000. While the illustration exaggerates the usual situation, it emphasizes the importance of giving consideration to such possibilities.

Where goods are manufactured to order, the physical quantities to be produced can be definitely ascertained only as orders are received. Some estimate is usually possible on the basis of past experience, expected general business conditions, and sales representatives' current reports, but definite determination must await the receipt of the orders. The budget of quantities in this case is based on a combination of orders actually received and contemplated orders.

Timing the Production. Having determined the length of the production budget period and having ascertained the quantities to be produced within that period, there arises next the question of the distribution of the work throughout the period. This does not contemplate the day-to-day planning and scheduling. Such work must be done by the production planning department; but it can be done only after a basic production program has been established. If, for example, a six months' production program is being developed and it has been decided to produce, in that time, 100,000 units of Product A, 200,000 of Product B, and 300,000 of Product C, the question remains as to when and at what rate the goods should be produced. Should all of the A goods be made in January, the B goods in February, the C goods in March, and then the plant be closed for April, May, and June? While this is unlikely, it is conceivable that such a program might be desirable. Obviously, the production planning department cannot proceed to schedule the work until the general program is established.

As noted before, this program applies particularly to stock goods.

With special orders the concern must prepare itself as best it can to produce the orders as they are received.

The ultimate goal is to insure the production of goods in quantities sufficient to meet the requirements of the sales budget without the accumulation of excessive inventories, without creating excessive costs through uneconomical lots, and without wastes of labor and equipment.

The best service is provided to customers when the production program is timed well ahead of sales budget requirements. Thus, if orders for the delivery of 1,000 units of Product A are expected to be received during the month of February, the entire production might be timed for January in order to be sure of having the goods immediately available should the orders be unexpectedly heavy during the first few days of February. This plan may have the serious disadvantage, however, of tying up excessive working capital in inventories, of creating heavy storage and handling charges, and of risking price declines and obsolescence. Inventory accumulation, on the other hand, presents opportunities for reducing costs through level production and economical runs. All factors must be properly balanced.

In determining the time of production and the size of the inventory to be carried, the following factors must be considered:

1. *Available Plant Facilities.* The production program must obviously conform to plant facilities and should contemplate the most effective and economical use of such facilities. Any additions contemplated should be subjected to the most exacting tests of ultimate profitability. Far too often equipment has been added to meet temporary demands and then left idle. On the other hand, the fact that expensive equipment will otherwise be idle and that large underabsorbed overhead will thereby develop often leads to the budgeting of standard items for stock in excess of current demands.

2. *Adequacy of Storage Facilities.* Where the goods are bulky in character, it may be impractical to provide storage facilities greatly in excess of current requirements. The cost of such storage must be weighed against the gains of level production.

3. *Stability of Employment.* Where the demand is seasonal and production follows the sales budget, workers must be frequently added and laid off with resulting instability of employment. This is costly to the producer and demoralizing to the worker. This may be avoided in some instances by carefully planning the production and building up inventories during slack seasons. This factor has gained added importance through the merit rating provisions of Unemployment Insurance Acts of the federal and state governments. These Acts, as presently constituted, contemplate a lower tax rate on employers who

provide regularity of employment. Some concerns have developed a remarkable degree of stability of employment, in so far as seasonal factors are concerned, by carefully planning the year's production; with many others, there is still much to be accomplished in this direction.

4. *Economical Runs and Efficiency of Operation.* In some instances the quantities of a particular item provided in the sales budget are not sufficient for efficient production operations. They do not constitute an economical run. Here larger quantities may be run and placed in the inventory on the theory that carrying costs will be more than offset by lower production costs. Extreme caution is necessary in such procedure as actual carrying costs and obsolescence are frequently higher than estimated.

Moreover, in considering the efficiency of operations, the accountant will sometimes find it desirable to prepare preliminary estimates of the financial results of stabilized production. It is a vital part of the planning function—the consideration of alternatives. Such computations permit management to see the relative merits of the two plans.

5. *Economies in Purchasing.* In some instances the production program may be influenced by possible economies in large-scale purchases of materials. Here again, the gain must be carefully weighed against the cost of carrying such inventories.

6. *Adequacy of Capital.* Limitations of capital may prevent the accumulation of large inventories, no matter how desirable from other standpoints. The production must be so timed as to result in a balanced financial program.

All such factors must be taken into account in planning the production program. Frequently, the best way to proceed is to set minimum limits below which the inventory of each item is not permitted to fall, as a matter of insuring reasonable service to customers; and maximum limits above which the inventory should not go, as a protection against excessive carrying costs, dangers of inventory losses, and excessive demands on capital. The next step is to schedule the production between these limits at as level a rate as possible consistent with economical operation.

To illustrate, assume the following data relative to Product A:

Minimum inventory, 50 units
Maximum inventory, 150 units
Budget period, 6 months
Expected inventory January 1, 50 units
Required inventory June 30, 110 units

Month	Production Schedule	Budgeted Shipments	Inventory at Close of Month
Inventory January 1			50
January	75	20	105
February	75	30	150
March	100	100	150
April	150	150	150
May	70	100	120
June	70	80	110

Here the production schedule is fairly even for four of the six months but it rises sharply in March and April. If, however, the maximum inventory is raised from 150 to 180 units, a level schedule of production can be developed as follows:

Month	Production Schedule	Budgeted Shipments	Inventory at Close of Month
Inventory January 1			50
January	90	20	120
February	90	30	180
March	90	100	170
April	90	150	110
May	90	100	100
June	90	80	110

Under the former plan the average inventory is 119.3 units, whereas under the second plan it is only 120 units; thus it would appear that the second plan is desirable.

Initial inventory limits may be developed by means of turnover rates which experience indicates to be practicable, or by applying selected factors to the sales budget. Thus, the maximum may be set as one-third of the period's expected sales and the minimum as one-sixth. Resulting figures can then be modified as indicated by the above illustration.

Place of Production. Where there is more than one plant adapted to the same product, the production budget must indicate where the goods are to be produced. This involves such considerations as:

1. Relative cost of operations.
2. The obligation felt by management to local communities.
3. Distribution of employment desired.
4. Dangers of labor trouble and consequent advantage of decentralizing operations.

Manufacturing Operations Required. Where there is a varied line of products, it is frequently necessary that the physical quantities budgeted be resolved into production operations and machine capacity required. In such cases records must be kept for each product showing the manufacturing operations necessary; and a record of each machine should be maintained showing the operations performed by the machine together with its capacity. Figure 29 illustrates the adaptation of such information to a cigar manufacturing concern.

MACHINE CAPACITY—NORMAL SCHEDULE

Kind of Cigar	Number of Machines	Production Per Hour	Machine Hours on Schedule of 2,179 Hours* Per Year	Annual Production in Thousands
Brand A... . .	130	457	283,270	129,454
Brand B....... ..	30	400	65,370	26,148
Brand C.	20	514	43,580	22,400
Brand D .	50	457	108,950	49,790
Brand E . .	10	457	21,790	9,958
				237,750

* Each machine is expected to operate 2,179 hours during the year after making proper allowance for Sundays, holidays, inventory, adjustments, and repairs.

FIGURE 29. Record of Machine Capacity

Detailed Physical Production Program. Budgeting does not, as a rule, contemplate the detailed planning and scheduling of production operations from day to day. This is a task for the production planning department, once the general production program has been developed. It involves the entire subject of production planning, scheduling, and dispatching. Much has been written concerning this phase of the work and it lies outside the province of this book.

Responsibility for the Production Program. The preceding discussion has related largely to the *what* and *how* of the production budget, but very little has been said as to *who* does what. Although practice varies, it is primarily the responsibility of the production executives, and not the accounting or budget personnel, to plan when and where the articles are to be manufactured. To be sure, the accountants may assist. Also, the budget director or chief accounting officer has the responsibility for making an over-all review. But most of the questions related to production, and certainly the final responsibility for the feasibility of the production program, must rest with the production executives.

Reporting on the Program. Once the production program has been agreed upon, the remaining requisite is a continual follow-up on actual performance as related to the schedule. There are many informational and control reports relating to specific elements of production which will be illustrated in succeeding chapters. The concern here is not labor costs in relation to the budget, or actual versus standard material costs, but rather a comparison of actual and scheduled production. However, the reports must be tailored to suit the needs of the individual executives. For example, daily reports showing the single day's production and cumulative monthly production—each in relation to the schedule might be useful. Simple line charts also may be of value.

Standards of Production Performance. Standards of production performance are necessary to reveal the quantities of material, the number of hours of labor, the machine hours, and quantities of service (as, for example, power, steam, etc.) necessary to perform the various production operations. The establishment of such standards is an engineering rather than an accounting task, but it should be emphasized that such standards are essential to the development of the budgetary procedure—at least in so far as the budget is to serve as a tool of control. Such standards serve not only in the development of the budget and in measuring efficiency of production performance, but also in developing purchase requirements and in estimating costs.

Material, Labor, Service, and Equipment Requirements. Once it is known what quantities are to be produced during the budget period, how the production is to be distributed in point of time and place, what manufacturing operations are entailed, and the standards of production performance, it is possible next to develop the detailed programs of material, labor, service, and equipment purchases. This phase of production budgeting is discussed in Chapters 12 to 15, inclusive. It should be noted that these requirements can be determined definitely only where goods are manufactured for stock and where special orders can be estimated with reasonable accuracy. Some concerns manufacturing to order must continually revise the production program by progressively adding the requirements for new orders received and dropping completed orders.

Translation of Production Program into Costs. Before reviewing in detail the manufacturing cost elements, the relationship of the production program to manufacturing costs and cost control may be better understood by a birds-eye view of the translation of the *volume* budget into values.

After the production program has been developed in terms of physical quantities to be produced, manufacturing operations involved, and material, labor, and equipment required, the entire program must be expressed in terms of cost. In so far as practicable standard costs should be established and the planned production translated into such costs in the following manner:

1. Direct material cost (varying directly with volume)—
   - *a*) At standard quantities.
   - *b*) At standard or estimated prices.
2. Direct labor cost (varying directly with volume)—
   - *a*) At standard hours.
   - *b*) At standard or estimated rates.
3. Burden cost—
   - *a*) Variable directly with volume—at standard amounts or rates.
   - *b*) Semivariable with volume—at standard amounts or rates for each volume bracket within the probable volume range.
   - *c*) Fixed—at standard amounts to be charged to production and remaining amounts to be charged to idle capacity.

The procedure may be illustrated by a very simple example. Assume that a concern has a normal plant capacity of 100 units of product and that the current production budget calls for 80 units. Only one product is made and its production requires two operations, A and B. For the sake of simplicity it will be further assumed that all costs can be resolved into variable and fixed classifications. Standard costs are:

Variable costs per unit of product:	
1 unit of direct material at $2.00	$ 2.00
Operation A (variable labor and burden)	3.00
Operation B (variable labor and burden)	5.00
Total	$10.00

Fixed production costs for the budget period are $500, or $5.00 per unit, based on normal capacity. The production cost budget would then be expressed as follows:

Budget

Variable costs (80 units at $10.00)	$ 800
Fixed costs (80 units at $5.00)	400
Costs chargeable to production	$1,200
Cost of idle capacity	100
Total budgeted costs	$1,300

In this manner the physical production program is translated into terms of cost to be projected ultimately into the financial program and expressed in the budgeted statements of operations and financial position.

Budgeted Costs as Basis for Cost Control. A continuation of the above illustration will serve to indicate the value of budgeted costs as a basis for cost control. Assume, for example, that actual results are as follows:

Units produced	72
Material used (units)	74

Actual costs are:	
Material cost (74 units at $1.80)	$ 133.20
Operation A—variable costs (72 units at $3.00)	216.00
Operation B—variable costs (72 units at $5.2416)	377.40
Fixed costs—charged to production	400.00
Costs charged to production	$1,126.60
Cost of idle capacity	100.00
Total actual costs	$1,226 60

It is apparent from these figures that total production costs are less than the budget by $73.40 ($1,300—$1,226.60). This figure is not particularly significant, however, as the actual production was 8 units less than the quantity budgeted. Carrying the analysis further, the following results may be obtained:

	Budget Restated for 72 Units	Actual Costs	Favorable Variance	Unfavorable Variance
Material	$ 144	$ 133.20	$10.80	
Operation A	216	216.00		
Operation B	360	377.40		$17.40
Fixed costs	360	400.00		40.00
Total	$1,080	$1,126.60	$10.80	$57.40
				10.80
Net unfavorable variance				$46.60

ANALYSIS OF VARIANCES

	Favorable	Unfavorable
Excessive material usage (2 units at $1.80)		$ 3.60
Material price below standard (72 units at 20 cents)	$14.40	
Excessive B operation cost		17.40
Idle capacity cost in excess of budget		40.00
	$14.40	$61.00
		14.40
Net unfavorable variance		$46.60

Here it is apparent that production operations were not as efficient as planned. Excessive material was used and Operation B was costly. The only reduction in costs arose from a reduction in the price of material over which the production department had no control. The increase in idle-capacity cost may be assumed to lie with management rather than with the production department.

It should be noted that such results are available only when the budgeted costs are flexible. Such flexibility is secured by resolving the costs into their variable and fixed elements; in fact, it is usually necessary to extend the analysis to semivariable elements.

While an actual case is considerably more involved than the illustration and the analyses of variances and their causes must be greatly refined, the example as shown should serve to demonstrate the value of the budget as a cost control device.

Substitution of Estimates for Standards. Where standard costs are not available or their use is impracticable due to uncertainty of prices, estimates of the costs must be made on the basis of past experience and expected conditions. Failure to use standards largely eliminates the use of the budget for purposes of control of costs but its value remains for purposes of coordination of the program with purchases and finance.

Cost Standards Essential for Control.[1] The production of goods in the modern mechanized factory is a complicated process. It results from the combined effort of many individuals in many different departments, performing numerous functions and operations; and it frequently involves many different products. No one executive can directly supervise all of the activities. Innumerable opportunities exist for the waste of time and materials. The budgetary procedure constitutes perhaps the greatest single aid to the executives who must assume the responsibility for efficient direction and control of the production operations. This procedure, if fully developed, presents an organized plan of operations with predetermined standards by which to measure and control the cost of such operations. This control is exercised by means of prompt reports to major and minor executives which reveal the failure or success of effort as related to individuals, operations, departments, and products. While it is seldom possible to continuously provide standard measurements for every operation and the performance of every individual, the principle is widely applicable and the extent of its use is generally a fair measure of the degree of efficiency of the central management.

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[1] For a detailed review of standards, see J. B. Heckert and J. D. Willson, *Controllership* (New York: The Ronald Press Co., 1952), pp. 17-37.

Chapter 12

MATERIALS AND INVENTORY BUDGETING AND CONTROL

Budget Applications

Purpose of Materials and Inventory Budgets. Two distinct phases are distinguishable in any consideration of the materials and inventory budget. There is, first, the problem of *acquisition* of the necessary raw materials or goods or services, which aspect is commonly referred to as the purchases budget. There is, also, the matter of *inventory* budgeting and control. Both subjects are interrelated. And in contrast to the usual budget applications, both place different emphasis on the planning, coordinating, and controlling phases of budgetary procedure. For example, with respect to the procurement of raw materials, more stress would seem to center on the planning and coordination aspects. Materials of the right kind must be delivered on time and in sufficient quantities to serve the needs of production. Generally speaking, then, the purchases budget or program must be expressed in physical quantities, and not value. Moreover, the controller or budget supervisor does not usually think of the purchases budget as a control tool wherein, for example, the budgeted quantities of raw material "X" for January are compared with actual purchases or receipts—as would be a proper approach in expense control. To be sure, purchases are translated into dollars, as is illustrated in this chapter, but this is less for material control purposes than it is to permit the financial department to determine, and provide for, the cash requirements.

Similarly, in budgeting inventories, there are instances where such budgets are used for control purposes. In the majority of companies, however, the dollar value of planned inventories is of immediate concern in arranging for financial needs; and the physical quantities of inventories are planned as a vital phase of meeting customer needs and determining production requirements. Planning and coordination objectives predominate in the inventory budget picture. Other means, such as inventory turnover rates, or minimum and maximum limits, are the usual devices which assist in inventory *control.*

With this understanding as to the *why* of the materials and inventory budget, the various considerations may be reviewed. In the typical industrial concern, the preparation of the materials and inventory budget involves a determination of:

1. The quantities of raw materials to be used.
2. The time when such materials will be required.
3. The cost of materials to be used.
4. The quantities and value of materials to be carried in the inventory.
5. The quantities and cost of materials to be purchased.
6. The timing of purchases.
7. The quantity and value of work in process to be carried in the inventory.
8. The quantity and value of finished goods to be carried in the inventory.
9. The methods to be employed in controlling material costs and inventory quantities and values.

This budget may also include manufacturing supplies, small tools, etc., although these may be set up in the budget of manufacturing expense.

The basic problems are the same for trading concerns except that they pertain in such companies only to the purchase and control of merchandise.

Budgeting Raw Material Consumption. The method to be employed in budgeting raw material consumption is dependent largely on the degree of standardization to which the products of the company can be subjected. Some concerns with a large volume of standardized products, such as motors, have established standard material requirements for each unit produced. Here the plan is simple; if 1,000 units of a certain model are called for by the production program and if each requires 2 units of Material X, with no allowance for loss or waste, then a consumption of 2,000 units of Material X must be budgeted. In this manner the entire material requirements can be developed for all items included in the production budget.

An illustration of this method of ascertaining material quantities is supplied in the manufacture of furniture. Here a calculation is made of the footage of lumber required, and the waste, for each part of the article. For example, suppose No. X Dresser requires the following dimension footage of lumber:

No. X. Dresser

Material	Dimension Footage	Waste 40 %	Gross Footage	Price	Cost
4/4 Chestnut	13.1	8.7	21.8	$22.00	$0.48
4/4 Poplar	8.8	5.9	14.7	25.00	.37
4/4 Gum	2.6	1.7	4.3	34.00	.15
5/4 Gum	.6	.4	1.0	36.00	.04
6/4 Gum	2.0	1.3	3.3	40.00	.13
5/8 Oak	12.6	8.4	21.0	30.00	.63
Total					$1.80

Similar standards are set for veneers and plywood. From such data it is possible to determine the quantity of each kind of material needed for the production budget and the total standard material cost of the budget.

In some concerns the budgeting of material quantities on the basis of detailed standards is not workable, or the method may be practically applied to some materials and not to others. The standard method is seldom feasible when the material content of products changes frequently and when goods are partially or entirely made to customers' specifications. While it is desirable always to employ the standard method to the fullest extent practicable, it seldom can be relied upon entirely.

Another method of budgeting material quantities is to establish a ratio of material used to various sales and production budget factors, such as physical quantity of sales, dollar sales, physical quantity of production, direct labor hours, standard labor hours, or direct labor cost. A foundry, for example, may establish ratios of pig iron, scrap, etc., to physical production. Thus, if 10,000 tons of finished castings are to be produced, the pig iron requirements may be set at 14,300 tons, based on a ratio of 143%. This plan is applicable especially to concerns using a few basic materials.

Any method of approximating the material quantities or costs will be more accurate if products are classified and different ratios established for each class.

In budgeting material quantities, due allowance must be made for spoilage and waste in the manufacturing process.

Timing Material Consumption. The time when materials will be required must be ascertained, as well as the quantities. This is governed by the production budget. Once the latter has been developed as discussed in Chapter 11, no particular difficulty arises in ascertaining the time when materials will be needed.

Budgeting Material Prices. Some concerns establish standard prices for materials as well as standard quantities; the product of the two then becomes the standard material cost. Any difference between the actual purchase price and the standard price is then transferred to price variance accounts. These variances may be reflected at the time the material is purchased or at the time it is put into process. The variances reveal the extent to which market prices (or the price paid) vary from the standard. The standard prices are usually based on what is considered to be normal prices.

In other concerns, materials are contracted for in advance of the budget period in which case the contract price is used for budgeting.

Where neither of the above methods is employed, it is necessary for the purchasing department to estimate the prices which will have to be paid for materials at the time they are purchased. It frequently happens that two or more methods may be used for different classes of materials. With estimates at hand of both the quantities to be used and the prices to be paid, the element of materials cost is readily available.

Inbound Freight or Express. Usually an element of the material price standard is the freight-in cost. The cumulative cost involved in this factor, and the many important savings possible through proper analysis, should not be overlooked. This cartage cost is determined typically on the basis of the cost from the expected supplier or suppliers in the standard ordering quantity and by the expected method of shipment. Thus, it can be seen that excess costs or savings may arise from several factors: (1) from distance greater or less than to the usual supplier; (2) by reason of different quantities shipped—L.C.L. instead of carload; or (3) method of shipment—truck instead of rail. Some companies determine a separate variance for in-bound freight costs.

In setting the freight standard, consideration ought to be given to the most economical method of shipment, including, for example, the use of commodity rates instead of class rates. The coöperation of the traffic department is needed to develop adequate standards.

Budgeting the Materials Inventory. There are basically two methods of developing the inventory budget of raw materials and supplies—namely:

1. Budget each important item separately based upon the production program.

2. Budget materials as a whole or classes of materials based upon selected production factors.

Practically all concerns must employ both methods to some extent, though one or the other predominates. The former method is always preferable to the extent that it is practicable.

Budgeting Individual Items of Material. The following steps should be taken in budgeting the major individual items of materials and supplies:

1. Determine the physical units of material required for each item of goods which is to be produced during the budget period.
2. Accumulate these into total physical units of each material item required for the entire production program.
3. Determine for each item of material the quantity which should be on hand periodically to provide for the production program with a reasonable margin of safety.
4. Deduct material inventories, which it is expected will be on hand at the beginning of the budget period, to ascertain the total quantities to be purchased.
5. Develop a purchase program which will insure that the quantities will be on hand at the time they are needed. The purchase program must give effect to such factors as economical-sized orders, economy of transportation, and margin of safety against delays.
6. Test the resulting budgeted inventories by standard turnover rates.
7. Translate the inventory and purchase requirements into dollars by applying the expected prices of materials to budgeted quantities.

In practice, many difficulties arise in executing the foregoing plan. In fact, it is practicable to apply it only to important items of material which are used regularly and in relatively large quantities. Most manufacturing concerns find that they must carry hundreds or even thousands of different items of materials and supplies to which this plan cannot be practically applied. Moreover, some concerns cannot express their production programs in units of specific products. This is true, for example, where goods are partially or entirely made to customers' specifications. In such cases it is necessary to look to past experience to ascertain the rate of movement and the regularity of movement of individual material items and to determine maximum and minimum quantities between which the quantities must be held. This necessitates a program of continuous review of material records as a basis for purchasing; and frequent revision of maximum and minimum limits, to keep the quantities adjusted to current needs.

Budget Based on Production Factors. For those items of materials and supplies which cannot be budgeted individually, the budget must be based on general factors of expected production activity, such as total budgeted labor hours, productive hours, standard allowed hours, cost of materials consumed, or cost of goods manufactured. To illustrate, assume that cost of materials consumed (other than basic materials which are budgeted individually) is budgeted at $1,000,000 and that past experience demonstrates that these materials and supplies should be held to a rate of turnover of 5 times per year; then an average inventory of $200,000 should be budgeted. This would mean that individual items of material could be held in stock approximately 73 days (1/5 of 365 days). This could probably be accomplished by instructing the executives in charge to keep on hand an average of 60 days' supply. While such a plan cannot be applied rigidly to each item, it serves as a useful guide in the control of individual items and prevents the accumulation of excessive inventories.

In the application of this plan, other factors must also be considered. The relationship between the inventory and the selected factor of production activity will vary with the degree of production activity. Thus, a turnover of five times may be satisfactory when materials consumed are at the $1,000,000 level but it may be necessary to reduce this to four times when the level goes to $750,000. Conversely, it may be desirable to hold it to six times when the level rises to $1,250,000. Moreover, some latitude may be necessitated by the seasonal factor, as it may be necessary to increase the quantities of materials and supplies in certain months in anticipation of seasonal demands. The ratio of inventory to selected production factors at various levels of production activity and in different seasons should be plotted and studied until standard relationships can be established. The entire process can be refined somewhat by establishing different standards for different sections of the materials and supplies inventory.

The plan, once in operation, must be closely checked by monthly comparisons of actual and standard ratios. When the rate of inventory movement falls below the standard, the records of individual items must be studied to detect the slow-moving items.

Purchasing Budget Illustrated. Some of the problems and methods of determining the total amount of expected purchases may be better understood by illustration. Assume, for example, that this information is made available as to production requirements, after a review of the production budget:

	Class			
	Units			Amount
Period	A	B	C	D
195–				
January	400	500	*Unknown*	*Unknown*
February	300	600		
March	500	400		
Subtotal	1,200	1,500		
2nd Quarter	1,500	1,200		
3rd Quarter	1,200	1,500		
4th Quarter	1,000	1,700		
Total	4,900	5,900	10,000	$20,000

Solely for illustrative purposes, the following four groups of products have been assumed:

Class A—Material of high unit value, for which a definite quantity and time program is established in advance—such as for stock items. Also, the material is controlled on a minimum-maximum inventory basis for budget purposes.

Class B—Similar to item A, except that, *for budget purposes,* minimum-maximum limits are not used.

Class C—Material items for which definite quantities are established for the budget period, but for which no definite time program is established—such as special orders on hand.

Class D—Miscellaneous material items which are grouped together and *budgeted* only in terms of total dollar purchases for the budget period.

In actual practice, of course, decisions as to production time must be made as to items using C and D classifications. However, the bases described later in this chapter are applicable in planning the production level.

Class A. Where the items are budgeted on a minimum-maximum basis, it usually is necessary to determine the range within which purchases must fall, so as to (1) meet production needs, and (2) stay within inventory limits. A method of making such a calculation is shown below:

	Units	
	For Minimum Inventory	For Maximum Inventory
January Production Requirements	400	400
Inventory Limit	50	400
Total	450	800
Beginning Inventory	200	200
Limit of Receipts (Purchases)	250	600

Within these limits, the quantity to be purchased will be influenced by such factors as unit transportation and handling costs, price considerations, storage space, availability of material, capital requirements, etc.

A similar determination would be made for each month for each such raw material, and a schedule of receipts and inventory might then be prepared, somewhat in this fashion:

Period	Units				Unit Value	Purchases Budget
	Beginning Inventory	Receipts	Usage	Ending Inventory		
January	200	400	400	200	$200	$ 80,000
February	200	400	300	300		80,000
March	300	400	500	200		80,000
Subtotal		1,200	1,200			$240,000
2nd Quarter	200	1,350	1,500	50		270,000
3rd Quarter	50	1,200	1,200	50		240,000
4th Quarter	50	1,200	1,000	250		240,000
Total		4,950	4,900			$990,000

Class B. It is assumed that the Class B materials can be purchased as needed. Since other controls are practical on this type of item, and as no other procurement problems exist, purchases are determined by the production requirements. A simple extension is all that is required to determine dollar value of expected purchases:

Period	Quantity	Unit Price	Total
January	500	$10	$ 5,000
February	600		6,000
March	400		4,000
Subtotal	1,500		$15,000
2nd Quarter	1,200		12,000
3rd Quarter	1,500		15,000
4th Quarter	1,700		17,000
Total	5,900		$59,000

Class C. The breakdown of the Class C items, may be assumed to be as follows:

Item	Quantity	Unit Price	Cost
C-1	1,000	$1.00	$ 1,000
C-2	2,000	1.10	2,200
C-3	3,000	1.20	3,600
C-4	4,000	1.30	5,200
Total	10,000		$12,000

A determination as to time of purchase must be made, even though no definite delivery schedules, etc., have been set by the customer. In this instance, the distribution of the cost, and units, might be made on the basis of past experience or budgeted production factors, such as budgeted machine hours. The allocation to periods could be made on past experience, as follows:

Period	Past Experience as to Similar Units Manufactured	Units					Value (Purchases Budget)
		C-1	C-2	C-3	C-4	Total	
January	10%	100	200	300	400	1,000	$ 1,200
February	15	150	300	450	600	1,500	1,800
March	10	100	200	300	400	1,000	1,200
Subtotal	35%	350	700	1,050	1,400	3,500	$ 4,200
2nd Quarter	30	300	600	900	1,200	3,000	3,600
3rd Quarter	20	200	400	600	800	2,000	2,400
4th Quarter	15	150	300	450	600	1,500	1,800
Total	100%	1,000	2,000	3,000	4,000	10,000	$12,000

The breakdown of units is for the benefit of the purchasing department only, inasmuch as the percents can be applied against the total cost, and need not apply to individual units. In practice, if the units are numerous as to types and of small value, the quantities of each might not be determined in connection with the forecast.

Class D. Where the materials are grouped, past experience again may be the means of determining estimated expenditures by period of time. Based on production hours, the distribution of Class D items may be assumed to be as follows (cost of such materials assumed to be $2 per production hour):

Period	Productive Hours	Amount
January	870	$ 1,740
February	830	1,660
March	870	1,740
Subtotal	2,570	$ 5,140
2nd Quarter	2,600	5,200
3rd Quarter	2,230	4,460
4th Quarter	2,600	5,200
Total	10,000	$20,000

When all materials have been grouped, requirements determined, and translated to cost, the materials budget may be summarized, principally for the financial forecast, as follows:

THE BLANK COMPANY
PURCHASES BUDGET
For the Year 1955

	Class				
Period	A	B	C	D	Total
January	$ 80,000	$ 5,000	$ 1,200	$ 1,740	$ 87,940
February	80,000	6,000	1,800	1,660	89,460
March	80,000	4,000	1,200	1,740	86,940
Subtotal	$240,000	$15,000	$ 4,200	$ 5,140	$ 264,340
2nd Quarter	270,000	12,000	3,600	5,200	290,800
3rd Quarter	240,000	15,000	2,400	4,460	261,860
4th Quarter	240,000	17,000	1,800	5,200	264,000
Total	$990,000	$59,000	$12,000	$20,000	$1,081,000

The above illustration relates to raw materials. A similar approach would be taken with respect to manufacturing supplies. A few major items might be budgeted as the Class A or B items above, but the bulk probably would be handled as "D" items.

Once the requirements as measured by delivery dates have been made firm, it is necessary for the financial department to translate such data into cash disbursement needs through average lag time, etc. (See Chapter 23.)

Tabulating Applications. The many ways in which information must be presented for the most effective use by both the purchasing department as well as the financial division, and the numerous extensions necessary, make the determination of purchase requirements a suitable application for automatic tabulating equipment. For example, the total material requirements for the budget periods may be presented in several ways, merely by a re-sorting of cards:

1. By type of raw material, in summary form as to total of each item.
2. By type of raw material, segregated quantitatively as to finished product line.
3. By product line, detailed by type of raw material.

Budgeting Work in Process. The inventory of goods actually in process of production between stocking points can be best estimated by applying standard turnover rates to budgeted production. This may be expressed in either units of production or dollars and may be calculated for individual processes and departments or for the factory as a whole. The former is more accurate. To illustrate this procedure, assume the following inventory and production data for a particular process or department:

Process inventory estimated for January 1	500 units (a)
Production budgeted for month of January	1,200 units (b)
Standard rate of turnover (per month)	4 times (c)
Average value per unit of goods in this process	$10

With a standard turnover rate of four times per month the average inventory should be 300 units (1,200 ÷ 4). To produce an average inventory of 300 units, the ending inventory should be 100 units $\left(\frac{500 + 100}{2} = 300\right)$. Using the symbol X to denote the quantity to be budgeted as ending inventory, the following formula can be applied:

$$X = \frac{2b}{c} - a = \frac{2\ (1{,}200)}{4} - 500 = 100 \text{ units.}$$

Value of ending inventory is $1,000 (100 × $10).

Where the formula produces a minus quantity (as it will if beginning inventory is excessive), the case should be studied as an individual problem and a specific estimate made for the process or department in question.

Control over the work in process inventories can be exercised by a continuous check of turnover rates. Where the individual processes, departments, or plants are revealed to be excessive they should then be subjected to individual investigation.

The control of work in process inventories has been sorely neglected in many concerns. The time between which material enters the factory and emerges as finished product is frequently much longer than necessary for efficient production. An extensive study of the automobile tire industry revealed an amazing spread of time as between five leading manufacturers, one company having an inventory float six times that of another. This study indicated also, by an analysis of the causes of the float time, that substantial reductions could be made in all five of the companies without interference with production efficiency.

While it is desirable to reduce the investment in goods actually being processed to a minimum consistent with efficient production, it is frequently desirable to maintain substantial inventories of parts and partially finished goods as a means of reducing finished inventories. This point is discussed on pages 133-34.

Parts, partial assemblies, processed stock, or any type of work in process which is stocked at certain points should be budgeted and controlled in the same manner as materials. That is, inventory quantities should be set for each individual item, based on the production program; or inventory limits should be set which will conform to standard rates of turnover. In the former case, control must be exercised through the enforcement of the production program; in the latter case, maximum and minimum quantities must be established and enforced for each individual item.

Budgeting Finished Goods. The budget of finished goods inventory (or merchandise in the case of trading concerns) must be based upon the sales budget. If, for example, it is expected that 500 units of Item A will be sold during the budget period, it must be ascertained what number of units must be kept in stock to support such a sales program. It is seldom possible to predetermine the exact quantity which will be demanded by customers day by day. Some margin of safety must be maintained by means of the finished goods inventory so that satisfactory deliveries can be made. With this margin established, it is possible to develop a program of production or purchases whereby the stock will be replenished as needed.

Budgeting Finished Goods by Individual Items. Two general methods may be employed in budgeting the finished goods inventory. Under the first method, a budget is established for each item separately. This is done by studying the past sales record and the sales program of each item and determining the quantity which should be on hand at various dates (usually the close of each month) throughout the budget period. The detailed production or purchase program can then be developed to provide such quantities over and above current sales requirements. The total budget is merely the sum of the budgets of individual items. This total budget can then be tested by the rate of turnover desired as proof that a satisfactory relationship will be maintained between inventory and sales and that it harmonizes with the general financial program. If it fails in either respect, revision must be made in the program of sales, production, or finance until a proper coordination is effected.

Under this plan, control over the inventory is effected by means of enforcement of the sales and production programs. If either varies to any important degree from the budget, the other must be revised to a compensating degree and the inventory budget revised accordingly.

Where the sales and production programs can be enforced with reasonable certainty, this is the preferable method. It is particularly suitable for those concerns which manufacture a comparatively small number of items in large quantities. The application is similar in principle to that illustrated in connection with raw materials controlled budget-wise by minimums and maximums.

Budgeting Total Finished Quantities and Values. Where the sales of individual items fluctuate considerably and where such fluctuations must be watched for hundreds or even thousands of items, a second plan is preferable. Here basic policies are adopted relative to the relationship which must be maintained between finished inventory and sales. This may be done by establishing standard rates of turnover for the inventory as a whole or for different sections of the inventory. For example, it may be decided that a unit turnover rate of three times per year should be maintained for a certain class of goods, or that the dollar inventory of another class must not average more than one-fourth of the annual dollar cost of sales. The budget is then based upon such relationships, and the proper executives are charged with the responsibility of controlling the quantities of individual items in such manner that the resulting total inventories will conform to the basic standards of turnover.

With such standard turnover rates as basic guides, those in charge of inventory control must then examine each item in the inventory; collect information as to its past rate of movement, irregularity of demand, expected future demand, and economical production quantity; and establish maximum and minimum quantities, and quantities to order. Once the governing quantities are established, they must be closely watched and frequently revised if the inventory is to be properly controlled.

The establishment and use of maximum, minimum, and order quantities can never be resolved into a purely clerical routine if it is to be effective as an inventory control device. A certain element of executive judgment is necessary in the application of the plan. If, for example, the quantities are based on past sales, they must be revised as the current sales trend indicates a change in sales demand. Moreover, allowance must be made for seasonal demands. This is sometimes accomplished by setting different limits, for different seasons.

The most frequent cause of the failure of such inventory control plans is the assignment of unqualified personnel to the task of operating the plan and the failure to maintain a continuous review of sales experience relative to individual items. The tendency in far too many cases is to resolve the matter into a purely clerical routine and assign to it clerks capable only of routine execution. The danger is particularly great in concerns carrying thousands of items in finished stock, with the result that many quantities are excessive and many obsolete and slow-moving items accumulate in stock. The successful execution of an inventory control plan requires continuous study and research, meticulous records of individual items and their movement, and a considerable amount of individual judgment.

The plan, once in operation, should be continually tested by comparing the actual rates of turnover with those prescribed by the general budget program. If this test is applied to individual sections of the finished inventory, it will reveal the particular divisions which fail to meet the prescribed rates of movement. The work of correction can then be localized to these divisions.

Whenever possible, the plan of finished inventory control should be exercised in terms of units. When this is not practicable, it must be based on dollar amounts.

Other Control Applications

Controlling Material Costs and Inventories. In the preceding section of this chapter the budget applications of material purchases and inventories were reviewed. However, the work of developing these budgets is only a part of the task. There remains the problem of enforcing the program, as well as making the necessary revisions. The basis of control, of course, is to compare budget, or standard, with actual performance and reveal unsatisfactory performance before large losses develop. Control applications other than those directly relating to the budget will be briefly reviewed in the remaining part of this chapter.

The approach to effective control of materials, whether raw materials, work-in-process, or finished goods, usually recognizes the separate elements in the problem, namely,

1. Material *price* variances.
2. Material *usage* variances, which include waste, scrap, and spoilage.
3. *Inventory* control methods:
    - *a*) Turnover rates—by item of inventory, by department, and by division.
    - *b*) Inventory write-offs, markdowns, and losses from obsolete or slow-moving stock.
    - *c*) Cost of carrying inventory.

If the plans call for a price of $2 per unit of raw material, then procedures must be set up to signal departures from this level. If ten units of material should be used to make a finished article, prompt reporting of unfavorable variances must be made for the assistance of the production executives. As a final example, if the average finished goods inventory is to be 100 units, some plan must be evolved by which it is held to that quantity.

Material Price Variances. For control purposes, the share of excess material costs due to price variances should be segregated from that due to usage. In comparing actual and standard material costs, the use of price standards permits the segregation of variances arising from excess usage from those incurred by reason of price changes. By and large, however, the material price standards used for inventory valuation cannot be considered as a satisfactory guide in measuring the performance of the purchasing department. Prices of materials are affected by so many factors outside of the business that the standards represent merely a measure of what prices are being paid as compared with what was expected to be paid.

A review of price variances may, however, reveal some informative data. Exceedingly high prices may reveal special purchases for quick delivery because someone had not properly scheduled purchases. Or higher prices may reveal shipment via express when freight shipments would have been satisfactory. To generalize, the exact cause for any price variance must be ascertained before valid conclusions can be drawn. Some companies have found it advisable to establish two standards—one for inventory valuation and quite another to be used by the purchasing department as a goal to be attained.

By using a little imagination, however, those of the accounting staff who are responsible for assisting in material control can devise reports which will help the purchasing and production executives, whether it be merely making them aware of the effect of price changes in the product, or the areas of high costs, or in stimulating a program of cost reduction. As an example, a review of purchase orders may permit the periodic issuance of reports showing the components involved in cost changes and the effect of each on the finished product unit cost, perhaps before the event takes place.

Material Usage Standards. The very basis of material quantity control is to know in advance how much material should be used on the job, to secure frequently information as to how actual performance compares with standard during the progress of the work, and to take corrective action where necessary. The supervisor responsible for the use of materials, as well as his superior, should be aware of these facts. At the lowest supervisory level, details of each operation and process should be in the hands of those who can control usage. At higher levels, of course, only over-all results need be known.

The method to be used in comparing the actual and standard usage will differ in each company, depending on a number of conditions. Some of the more important factors which will influence the controller in applying control procedures as to material usage are:

1. The production method in use.
2. The type and value of the materials.
3. The degree to which cost reports are utilized by management for cost control purposes.

One of the most important considerations is the nature of the production process. In a job order or lot system, such as an assembly operation in an aircraft plant, where a definite quantity is to be produced, the procedure is quite simple. A production order is issued, and a bill of material or "standard requisition" states the exact quantity of material needed to complete the order. If parts are spoiled or lost, it then becomes necessary to secure replacements by means of a nonstandard or excess usage requisition. Usually the foreman must approve this request, and consequently the excess usage can be identified immediately. A special color (red) requisition may be used, and a summary report issued at certain intervals for the use of the production executives responsible.

If production is on a continuous process basis, then periodically a comparison can be made of material used in relation to the finished product. Corrective action may not be as quick here, but measures can be taken to avoid future losses.

Just as the production process is a vital factor in determining the cost accounting plan, so also it is a consideration in the method of detecting material losses. If losses are to be localized, then inspections must be made at selected points in the process of manufacture. At these various stations, the rejected material can be counted or weighed, and costed if necessary. When there are several distinct steps in the manufacturing process, the controller may have to persuade the production group of the need and desirability of establishing count stations for control purposes. Once these stations are established, the chief contribution of the accountant is to summarize and report the losses over standard. Such a simple thing as a scrap report, illustrated in Figure 30, can be of assistance in getting excess material usage under control.

Another obvious factor in the method of reporting material usage is the type and value of the item itself. A cardinal principle in cost control is to place primary emphasis on high-value items. Hence, valuable airplane motors, for example, would be identified by serial number and otherwise accurately accounted for. Items with less unit value, or not readily segregated, might be controlled through less accurate periodic reporting. An example might be lumber. The nature and value of the materials determine whether the *time* factor or the *unit* factor would be predominant in usage reporting.

Oftentimes management is not directly interested in *dollar cost* for control purposes, but rather only in *units*. There is no difference in the principle involved, but merely in the application. Under these conditions, the budget director should see that management is informed of losses in terms of physical units—something it understands. In this case, the cost report would be merely a summary of the losses. Experience will often show, however, that as the budget director gives an accounting in dollars, the other members of management will become more cost-conscious.

The essence of any control program, regardless of the method of reporting, however, is to follow-up on substandard performance and take corrective action.

THE NOVELTY MANUFACTURING COMPANY
SCRAP REPORT–STAMPING DEPARTMENT
For the Week Ended November 21, 1955

Description		No. of Pieces				
Part No.	Name	Production	Scrap	% Scrapped	Cost	Reason
647C	Hinge	12,320	207	1.68	$ 8.28	
871R	Ring	8,620	73	.85	3.65	
1422	Flap	3,110	672	2.16	282.24	Defective die
1816	Support	8,520	40	.47	16.00	
1871	Spoon	11,890	90	.76	1.80	
2167	Ruler	1,245	–	–	–	
2173	Cap "R"	14,505	1,070	7.38	107.00	Substitute material
2271	Cap "T"	8,140	72	.88	21.60	
	Total				$ 440.57	
	Cost of Scrap—Year to Date				$18,497.12	

FIGURE 30. Weekly Scrap Report

Inventory Control. The preceding few paragraphs have reviewed material price and usage control primarily as they affect operations directly—i.e., the actual manufacturing cost. Another facet which deserves much attention, and is of equal importance, is the control of inventories. The degree of care exercised in the control of inventories is not infrequently a major factor in determining the profit of the enterprise.

The dangers of excessive inventories are:

1. Idle capital.
2. Excessive costs of handling, storage, spoilage, obsolescence, taxes, and insurance.
3. Possibility of price declines.
4. An example to employees of wasteful management.

The dangers of inadequate inventories are:

1. Unsatisfactory service to customers.
2. Possible disadvantages in purchase price and transportation costs of too small quantities.
3. Excessive cost of internal purchase and office routine, follow-ups, and customer adjustments.
4. Excessive production costs resulting from interruptions and "short runs" due to lack of materials.
5. Labor problems resulting from irregular production which could be leveled out by means of larger inventories.

It is not the total quantity or value of inventories that is to be considered if the control is to be effective, but rather the individual items of materials and goods. It is entirely possible for total inventories to be excessive and yet there may be available an inadequate supply of many items.

Cost of Carrying Inventories. The cost of carrying inventories is frequently higher than management realizes. In manufacturing concerns it is seldom less than 10% per year, on the average inventory investment, and is frequently as high as 25%. Various studies which have been made indicate that it probably averages near 15%, excluding losses from price declines which, over a period of time, may be partially offset by price increases. A reduction of $100,000 in inventory thus offers a saving of some $15,000 provided it does not impair the programs of production and sales.

Inventory Control Often Neglected. In spite of the very high cost of carrying inventories and the great danger of excessive inventories, manufacturers at large have not as yet succeeded in establishing satisfactory inventory control. No industrial consultant can avoid the conclusion that the job is still poorly done in many concerns. Many failures are traceable to inventory losses. There are probably several reasons for the neglect of this phase of managerial control. In the first place, the task is seldom an easy one. No matter how complete may be the procedure established for inventory control purposes, a considerable element of personal judgment is required. The task can seldom be resolved to a purely clerical routine. Moreover, it is sometimes difficult to prove statistically in advance that there will be cost savings or other advantages through improved inventory control. Finally, the task is never completed. It requires continuous research, exacting records, and intelligent effort on the part of those responsible.

It is much easier to control inventories during a period of depression than during times of high activity. Particularly is this true of finished goods. In the former case, the manufacturer knows that he can increase production immediately as men and machines are readily available. Moreover, he is usually confronted with the necessity of conserving cash resources. In the latter case, when production is at capacity and optimism prevails generally, the matter of inventory control is likely to be neglected. The result is that a cessation of demand finds the inventories excessive and usually results in large write-offs. Any plan of inventory control should possess a degree of flexibility which will permit the inventories to expand rapidly in times of high demand and shrink rapidly as expected business conditions indicate a reduced demand. Intelligent budgeting contributes largely to such a plan.

Speculation in Inventories. Any investment in inventories is to some degree a speculation. The element of speculation may, however, be made the controlling factor or reduced to a minimum. In the former case it may supersede all other factors. Thus, if 10 units of a particular item of material appears to be the proper quantity to carry in the inventory in view of the production or sales program, the quantity may be raised to 15 or reduced to 5, for the reason that speculative factors outweigh production and sales factors. Even when speculation is reduced to a minimum, those in control of inventories will usually be influenced to lean in the direction of maximum or minimum requirements, depending upon the general opinion of the management group as to the upward or downward trend of prices.

It is the function of the budget to show what materials and goods will be required by the production and sales programs and when they will be needed. Beyond this the budget has no direct contribution to make in the matter of speculation.

Conditions Essential to Inventory Control. There are certain conditions essential to the successful budgeting and control of inventories. Most important of these are:

1. Classification and identification of inventories.
2. Standardization of inventories.
3. Adequate handling and storage facilities.
4. Satisfactory inventory records.
5. Satisfactory personnel.

Proper Classification and Identification of Inventories. The usual inventory of a manufacturing firm includes these classifications:

Raw materials.
Supplies.

Work in process.
Finished goods.

Each of these major categories may have several major subdivisions. Since the goods may be at several locations, another breakdown may be made by branch warehouse. In addition, there are often extraneous transactions, such as returnable containers, goods on loan, goods on consignment, or material in transit. For the purpose of budgetary control and proper accountability, these various classifications must be kept separate and transactions properly recorded.

Within each major classification, there are very often thousands of items which must be accurately identified if the movement of material is to be reported correctly. Improperly identified material can cause production delays or at least unnecessary effort if the wrong item is brought to the production line. On the other hand, accounting control becomes quite useless if one item is requisitioned but reported as another. Proper classification and identification of material are necessary to an effective inventory control system.

Standardization and Simplification of Inventories. Another important consideration in establishing inventory control is the standardization of materials and products and the simplification of the line. Simplification is merely the elimination of excess types and sizes. The elimination of those items which do not sell readily can contribute greatly to reducing the inventory which must be carried.

Standardization is a more general term having to do with the establishment of standards. In the application to inventories, it has reference to the reduction of a line to fixed types, sizes, and characteristics which are considered to be standard. The object is to reduce the number of items, to establish interchangeability of manufactured parts and products, and to establish standards of quality in materials. With a reduction in the possible number of inventory items to be carried, the control problem is facilitated.

Adequate Storage and Handling Facilities. A third essential factor in inventory control is adequate storage and handling facilities. No procedure, regardless of how well planned, can succeed in a disorganized or ill-equipped warehouse or storage area. Because items cannot be located, excess or really unnecessary materials will be purchased. Shipping memos calling for one lot of material will be filled with another—at the risk of customer ill-will—without proper reporting. Losses from obsolescence and damage will run high. Such conditions will make perpetual records meaningless. Under such a handicap, good inventory control is virtually impossible. On the other hand, the facilities should not be so elaborate as to incur unnecessary handling and storage costs.

Adequate Records and Reports. Inventory control presupposes a knowledge of the facts; and availability of the facts requires adequate inventory records and reports. Inventory records should contain the information to meet the needs of the purchasing, production, sales, and financial staffs. Typical information which may be required of any class of inventory is the following:

Quantity on hand.
Location.
Quantities on order.
Quantities in transit.
Amount set aside for particular customers or production orders.
Past experience as to purchases, production, or sales.
Unit cost.
Minimum and maximum quantities.
Standard ordering quantity.
Reorder point.

Every control-minded executive is interested in keeping clerical costs at a minimum, and the records and reports should be so designed. However, the objective is proper inventory control, and lack of control because of inadequate records has usually proved to be a foolish economy.

Satisfactory Personnel. Inventory control is not attained through the establishment of procedures and the maintenance of records. It is secured through the action of people; and there is no substitute for human intelligence and judgment. The records may show an item to be slow-moving or may reveal an excess inventory; but the record can neither dispose of the item nor reduce the inventory. Someone must have enough interest and initiative to review the records and recommend or take corrective action. This intelligence cannot be only at top levels of management, but must reach down to those who are given the specific responsibility for inventory control. Indeed, it may pay dividends to have someone in the organization whose sole job is to review inventories and spot weaknesses. More than to any other factors, the lack of effective inventory control in many businesses can probably be attributed to inadequately trained and unqualified personnel and improper organization.

Maximums and Minimums. One of the means available for inventory control is through the use of maximum and minimum stock quantities. A determination should be made as to the suitability of that type of control in a specific business. It might apply to one class of inventory but not another. For example, it may be applicable to the supply inventory but not to the raw materials or finished goods. As a general rule the use of maximums and minimums is practical where the rate of sale or use of the products is fairly stable, and not subject to wide fluctuations or sporadic movements, and where the order time is fairly short.

In establishing maximum and minimum inventory points, the following factors must be considered:

1. The rate of usage or shipment. This can be secured from an analysis of past experience, although current production and sales plans must be considered. The rate of usage must recognize not merely the average rate but also the *range* of usage, i.e., the highest rate and lowest rate of consumption.
2. The time requirement for either purchase or manufacture. This should be the time from the placing of the order until delivery, including a reasonable "safety" factor for delays. Past experience and a knowledge of current conditions are both important in making this determination.
3. The economical quantities to order. Discount brackets, setup time in a machine shop, and similar considerations can be factors in determining the economical amount to purchase or manufacture.
4. Storage facilities available. The cost of outside storage and added handling may make this factor decisive.
5. Working capital available.
6. Cost of carrying the inventory—rent, taxes, insurance, interest on investment, etc.
7. Possibility of deterioration or obsolescence of materials stored.
8. General market conditions and extent of speculation.
9. Effect on labor turnover. It may be desirable to fluctuate inventories to stabilize employment or retain basic personnel.

With this information the maximum and minimum stock points can be set. An explanation of the relationship of various quantities may be helpful. The minimum is the lower limit of the desirable inventory on a particular item. It represents a "cushion" or margin of safety to be used only in an emergency. Somewhat above the minimum point is the reorder point, which represents the minimum inventory plus the quantity required for use between the ordering and delivery period. The maximum is the upper limit of the desirable inventory, and usually is the minimum quantity plus the standard ordering quantity.

Once the minimums and maximums have been set, the inventory should be reviewed periodically by an inventory manager to detect any need for changes. Further, it should be a responsibility of the controller to have the inventory detail reviewed periodically to ascertain that the limits are being observed and that the limits are reasonable. As business conditions change, the upper and lower limits of the inventory will require adjustment.

Control Through Turnover. Another means by which some companies control inventories is through turnover rate. Standard turnover rates may be established for an entire inventory or for different sections. The executives responsible for the inventories must keep within the limits. A variation of the same principle is the establishment of a limit on the funds which may be invested in the inventory. Department stores operate on a turnover basis, and each buyer is expected to secure the required rate. Thus, if an inventory turnover of four times per year is required, and if anticipated sales (cost) are $2,800,000, then the average inventory cannot be greater than $700,000. Such a method is feasible under rather stable conditions, and when materials can be readily secured.

Turnover is obtained by dividing the usage factor by the average inventory. For example, the turnover of various inventories would be determined as follows:

Finished goods—Cost of sales / Average inventory of finished goods.
Work in process—Cost of goods completed / Average inventory of work in process.
Raw Materials—Materials placed into process / Average inventory of raw materials.
Supplies—Cost of supplies used / Average supply inventory.

The result is the number of turns. Common practice is to express rate in number of turnovers per year, although average length of time per turnover is often used. A turnover rate of four times per year would be expressed as a three-month turnover.

Such standards can be used as a guide, but their usefulness should not be overstated. A slow turnover can be an indication of overinvestment in inventories. On the other hand, a very high turnover can be secured by keeping an unduly small inventory with resulting lost sales or higher costs through fractional buying due to incomplete stocks. The objective of business is profit and not only turnovers. Turnover can be secured through increased sales or usage, which also brings profit, and not merely by reducing inventories.

Turnover rates have a definite place in judging efficiency, but improvement in turnover should not be sought as an end in itself. They should by no means be an automatic control, arbitrarily imposed. An intelligent appraisal of the situation is always necessary.

Use of Tabulating Equipment. The vast amount of detail, the use of inventory transactions for purposes other than inventory control, and the necessity for a continuous review of inventory make the use of punched card equipment quite valuable in many concerns. From the same data a number of records or reports can be run. The perpetual records showing receipts, disbursements, and balances can be prepared from the same cards from which summaries of usage are run. Automatic computation of average inventories and turnover rates is possible from the inventory transaction cards. A sample inventory run showing the rate of turnover is illustrated in Figure 31.

INVENTORY ANALYSIS

INV. CLASS	PART NUMBER	PART NAME	DATE OF LAST TRANSACTION			NUMBER OF TRANSACTIONS	TWELVE MONTHS USAGE	AVERAGE INVENTORY	TURN-OVER
			MO	DAY	YR.				
142		HARDWARE							
	3298	SCREW	12	10		65	25 440	1 020	25
	3786	SCREW	12	15		32	37 850	3 128	12
	4325	WASHER	10	20		875	102 750	31 427	3
	4326	WASHER	12	10		624	9846 200	824 700	12
	10111	NUT	1	15		1	1	3 100	
	11121	BOLT	12	13		130	48 750	8 107	6
	12032	COTTER PIN	4	11		64	6 547	2 182	3
	13242	SCREW	11	28		770	125 470	10 455	12
	28785	BOLT	10	27		700	95 622	95 675	1
	35485	BOLT	12	3		500	428 720	9 075	48
	43292	NUT	6	15		28	65 280	10 880	6
	47856	WASHER	10	23		139	325 755	13 330	25
	49221	PIN	12	7		270	95 470	8 247	12
	55687	TAPER PIN	12	7		801	428 675	221 525	2
	65493	LOCKWASHER	11	21		765	795 250	400 550	2
	65494	LOCKWASHER	11	9		724	787 343	196 805	4
	65495	LOCKWASHER	10	11		158	60 222	20 074	3
	72187	STUD	7	14		103	30 480	3 810	8
	72195	STUD	8	17		48	32 785	4 096	8
	75148	SCREW	12	2		725	865 420	96 150	9
	90185	BOLT	11	30		415	528 780	52 961	10

FIGURE 31. Inventory Turnover Report

Inventory Reports. Through the medium of reports the accounting staff may make a notable contribution to inventory control. By means of reports the controller is able to advise management of the effectiveness with which its plans on inventory control are being carried out. At the same time weak spots are pointed out for necessary action by the line staff, and this is of considerable assistance to them. Aside from the direct control purposes, inventory reports can stimulate ideas concerning standardization or simplification of materials, substitute materials, and improvements in material handling.

Meeting the inventory problems face to face will suggest practical reports which the controller can develop to aid and assist those charged with responsibility for control. The following are indicative of the great variety of reports that may be useful:

1. General summary of inventory by category.
2. Comparison of budgeted and actual inventory by classification.
3. Summary of inventory activity, showing balances on hand and commitments, compared with requirements.
4. Summary of inventory aging, indicating all slow moving or obsolete material.
5. Report on turnover.
6. Report on overages or shortages determined by physical count.
7. Comparison of actual and maximum inventories.

Chapter 13

LABOR BUDGET

Social Implications of the Labor Budget. There are certain social implications attendant upon the development of the labor program that are not present with materials, equipment, and other cost factors. While it may be expected that management will seek to hold its labor costs to a minimum, due consideration must be given to the effect of the program upon the workers. The worker is a human being, not a machine, and as such he has a vital interest in the regularity and security of his employment; and in fairness of reward, opportunity for advancement, and favorable working conditions. The workers constitute the most numerous, and therefore the most important, group in the industrial partnership of management, capital, and labor. Their interests should therefore receive paramount consideration. As an individual the worker is seldom in a position to demand such consideration; and, in the present chaotic state of collective action, his interests appear frequently to be negated by irresponsible and misguided leadership of collective agencies. Management in industry, as now constituted, must largely accept the responsibility for a fair adjustment between the rights of workers, investors, and consumers. The assumption of this responsibility demands far more than just a favorable attitude toward the rights of workers. Good intentions are not sufficient. Management must earnestly, sincerely, and intelligently explore every possibility of sales, production, and financial programs leading to stability and security of employment. Fair and accurate methods of employee reward must be established and continuously refined. The financial integrity of industry must be maintained but, within the limits imposed by this requirement, it must be recognized that the workers' interests are paramount.

It is the opinion of the authors that this responsibility is being widely accepted by American industrial leaders, both large and small, and that upon such recognition depends our chief promise of future economic strength and stability.

Importance of Labor Budget and Control. The social obligations and responsibilities of management in developing labor plans are not inconsistent with management's attempt to hold labor cost to a minimum. What good workers want is regularity and security of employment, with reasonable pay. This objective is not necessarily in conflict with low costs. If production is carelessly planned, with the result that there is an unnecessary amount of spasmodic increasing and decreasing of the labor force, the results may be both unsatisfactory to workers and productive of high costs. Such procedure usually results in idle investment in equipment and materials, poor labor morale, and a frequent lack of necessary training and skill on the part of workers, all of which contribute to high costs.

It must be recognized that consumer demand, which is to some extent beyond the control of management, limits the degree of regularity of employment which can be provided; yet, with due allowance for such limits, much depends upon the degree of care exercised in developing the sales and production programs and the coordination of labor requirements with these programs.

It should be understood that intelligent control of labor cost contributes both to the satisfaction of workers and to low costs. It is better, both for workers and management to have the work done by 20 men who are required to meet fair and reasonable standards of performance and who can consequently be paid a reasonable wage, than, through laxity of labor control, to require 25 men whose individual hourly wages must be held to a minimum in order to compete with a more efficient competitor.

In view of the social implications of labor planning and the fact that labor is frequently the largest element of manufacturing cost, the importance of labor budgeting and control is readily apparent.

Objectives of Labor Budget. While one of the first objectives of the labor budget is to provide the highest practicable degree of regularity of employment, consideration must also be given to the estimating and control of labor cost. Regularity of employment in itself effects some reduction in labor cost but when carried beyond the point of practicability it may increase other costs. For example, additional sales effort may be required to expand sales volume or to develop new products for slack periods; the cost of carrying inventories and the dangers of obsolescence and price declines must also be considered. A proper balance must be secured.

Certain special factors have arisen in recent years to add to the importance of regularity of employment. Merit rating plans have been adopted in many states whereby the unemployment compensation tax rates are based upon the degree of regularity of employment maintained by the taxpayer, with materially lower rates for level employment. The federal Fair Labor Standards Act and various state laws of a similar character make higher wage rates mandatory for overtime work and thereby encourage regularity of work as opposed to spasmodic slack and rush periods.

Provision for regularity of employment begins not with the labor budget itself but rather with the sales and production budgets as described in previous chapters. Once these general budgets are established, however, the detailed work of planning for labor requirements and controlling the labor costs becomes the function of the labor budget.

More specifically the definite purposes of the labor budget are:

1. To ascertain the number and kind of workers and man-hours which will be necessary to execute the production program during the budget period, and the time when such workers will be needed.
2. To ascertain the labor cost of the production program.
3. To determine amount and time of cash disbursements for labor that will be required by the production program.
4. To provide suitable bases for the measurement of labor performance and the control of labor costs.

Estimating the Quantity of Labor Required. The method of estimating the hours of labor required to execute the production program depends largely upon the circumstances of production. Where products are uniform and standard labor time allowances have been established for products, it is necessary only to multiply the production called for by the standards to arrive at the standard labor hours required. To this must then be added a percentage of variance from standard which experience has demonstrated to be representative of actual results, or which production executives believe, under the immediate circumstances, is likely to result, in order to arrive at the actual labor hours to be budgeted.

Where the products manufactured are not sufficiently uniform to make the above method feasible but where there is considerable uniformity of operations, the production may be translated into operation requirements. If the operation standards have been established in terms of man- or machine-hours, the quantity of labor required may be ascertained by multiplying the operations by the standards and making reasonable allowance for variances.

Where neither of the above conditions exists or where detailed standards have not been established, it is necessary to resort to ratios or estimates. Records of past experience should reveal the ratio of labor hours to physical volume of production. In so far as practicable, separate ratios should be established for each factory department or for each class of product in order to eliminate the effect of changes in the type of production between periods.

If none of the above methods is feasible, the labor time must be estimated. The preferable method here is to have each foreman or department head make his own estimate as to the kind and quantity of labor needed for the work assigned to him by the production budget. The estimates should then be studied, revised, and approved by higher production executives. The planning and cost departments can frequently assist the foremen in making their estimates.

Most concerns find it necessary to employ several methods. Even in those concerns in which products and operations are highly standardized, and in which there is a continuous program for setting and revising the standards, there will usually be found some work in a transitional state for which dependence must be placed upon foremen's estimates. It is also desirable to check one method against another; thus, past ratios of labor hours to physical quantity of production in each department may serve as a test check on foremen's estimates or on calculations of standard hours required. It should be emphasized that, even where standards are available, it is the expected actual time which is desired for the purpose of the budget.

The labor quantity estimate must indicate not only the total labor requirements for the entire budget period but also the time when such labor will be required within the budget period. This information must be supplied to the personnel or employment department so that the necessary amounts of all classes of labor will be available when needed. With this information at hand the personnel department can plan its labor program well in advance, provide in time for the training of new workers, and for necessary shifting of workers between departments.

In companies where the work depends chiefly upon large individual orders, the labor budget must be delayed until orders are received and then developed on the basis of such orders. This may require a more or less continuous process of labor budgeting. This method is illustrated in the procedure followed by the Newport News Shipbuilding and Dry Dock Company.[1]

> The labor budgets of this company are prepared and issued as soon as practicable after an order for the construction or repair of a vessel is received, and are based upon the best information available. The purpose of this budget is to allow the preparation of labor requirements and piece work contracts. The budgets are based on the estimated labor which goes to make up the contract price.
>
> Labor budgets are revised by this company for the following causes: addition

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[1] "Budgeting Manufacturing Operations," Policyholders Service Bureau, Metropolitan Life Insurance Co., New York.

or omission of work resulting from changes under the contract, changes under the contract, changes in yard organization, changes in the routine of work from one department to another, and improvement in facilities. Budgets may be adjusted between departments on the written recommendation of a superintendent, giving his reasons therefor, provided the total is not affected.

Estimating the Labor Cost. The method of estimating the labor cost depends upon the extent to which standard costs have been established and the methods of wage payment employed. Where standard labor costs have been established for the products manufactured, it is necessary only to multiply the units of product, called for in the production budget, by the standard labor costs and add to the product a reasonable variance from such standards which experience has demonstrated to be representative of actual results. It is necessary, of course, to anticipate any changes in the standard labor costs which may arise during the budget period, such as increased or decreased wage scales resulting from cost of living adjustments. Care must be exercised also to make due allowance for unusual variances expected to arise as a result of overtime premiums or other exceptional circumstances.

In concerns employing straight piece rates the labor cost of the planned production can be ascertained with reasonable certainty.

Where neither of the above methods can be employed, dependence must again be placed upon estimates or ratios as in the case of the labor quantity estimates. Under such conditions the estimates should be made by those executives most familiar with prevailing wage rates—usually the personnel or works executives. Here again, the estimates should be based upon actual expectation as to labor cost and should anticipate any exceptional circumstances likely to arise, such as idle time, delays, overtime rates, and enforced use of untrained workers. If ratios are used, they should represent the past relationship of labor cost to labor hours or to production volume with adjustment for expected changes in such relationships.

It must be obvious that the successful budgeting of labor time and cost depends largely upon the degree of standardization of labor operations and the adequacy of labor records pertaining to past labor performance and costs.

While the foregoing discussion of labor estimates pertains to direct labor, it is frequently desirable to apply the same methods to the indirect labor of the plant. Here the heads of the various service departments are called upon to estimate their labor requirements and costs, based on past experience, anticipated volume of operations, and such standards as can be applied to the indirect labor. These should then be reviewed by works and personnel executives and tested by standard relationships of indirect labor to direct labor or budgeted production volume.

In budgeting the labor cost it is necessary to ascertain not only the total cost of the production budget but also the time when the costs will be incurred and the resulting cash disbursements made. Labor payments usually constitute one of the chief items of cash disbursements and such information will serve to guide in the development of the cash budget and in summarizing the operating and financial program for the budget period.

Labor Budget Period. While a tentative labor cost budget should be prepared for the full budget period, it is usually necessary to make revisions at rather frequent intervals. Contracts cannot be placed for labor requirements of the future, nor can quantities of labor be carried in stock. Wage rates are becoming constantly more sensitive to changing conditions and it is difficult to project the labor cost far into the future.

Responsibility for the Labor Budget. Final responsibility for labor costs must, of course, rest largely with the chief production executive; and his approval should be secured for the estimate of direct labor costs covering the budget period. Very often the preparation of the data may be done in his office, or in the production planning and scheduling department. The cost department or budgets and standards department usually can be of assistance. If a tabulating installation is in operation, the tabulating department can readily supply necessary data as to standard man-hours, for example. Of course, when the labor budget is submitted, the information should be given a critical review for omissions, etc., before it becomes incorporated with the other budget data.

Illustrative Procedures. The procedure followed by an aircraft company manufacturing commercial planes is typical of that used by the metalworking shops, machine tool manufacturers, etc.:

1. Upon receipt of the production budget, the industrial engineering department would estimate the (average) standard man-hours for each plane in each month of the budget period, based upon an efficiency or learning curve. This standard was then adjusted, based on past experience, to recognize the overstandard man-hours expected.
2. This information, after approval by the Works Manager, was passed to the budget administrator, who had the unit data extended to determine total man-hour requirements by month.

3. From the production schedule of spare parts, based on the standard man-hours, the tabulating department computed the total standard man-hours, by months, needed for the production of the spare equipment.
4. The budget department added allowances for expected overuns, and calculated the labor cost by period.
5. The sum of the two elements constituted the estimate of direct labor for the budget period, subject to the approval of management.

The practice followed by a chemical company is illustrative of the approach used in a process plant:

1. By reference to the approved production schedule, the plant level of operation was determined:
   Viz., an 80% level of capacity, a 50% level, or a 100% level. (Each level has a different man-power requirement.) Thus an 80% level might be needed for six months, and a 100% level for another six months.
2. By reference to the calendar, the number of operating days each month was established.
3. The standard labor rate per operating hour was multiplied by the number of operating hours in each department to arrive at the total standard labor cost.
4. Based on past experience, a percentage was added to cover probable excess crews.
5. Total estimated labor cost was compared with standard to reveal extent of excess labor costs arising by reason of rates of production. Thus, it might be determined that $10,000 per week of labor cost was incurred for production that should require only $9,000. However, the process is such that shutdowns for short periods are uneconomical.
6. Estimated labor costs were included in the total production budget, which was submitted for approval.

These budgets served principally as estimates of cost for the financial forecast, and less as short-term control tools.

Control of Labor Costs. Perhaps the fundamental basis for effective labor control is the development and retention of a cooperative attitude between management and labor. Certainly, cost control must be founded on human engineering of this type. However, from an accounting standpoint, the immediate control of labor costs requires a knowledge of what the costs should be; a current record of what the costs actually are; and a prompt reporting to responsible executives of the difference between the two, with the causes and the responsibility. Back of this immediate problem lie many basic factors bearing upon labor cost, such as intelligent labor relations, suitable working conditions, proper equipment and tools, proper training and supervision, efficient planning, and fair methods of compensation. The consideration of these basic factors lies beyond the scope of this book. Assuming, however, that a company is giving continuous study to these basic factors, there is still the problem of currently controlling its labor costs. It is to this immediate problem that budgeting procedure and related standards lend assistance.

It should be emphasized here that the mere estimating of what the labor cost will be, while important for the coordination of operations and finance, makes no considerable contribution to the actual control of the labor cost. It is only when the procedure leads to intensive study and inquiry into what, under the circumstances, labor performance and the costs should be, that a basis is provided for control. In other words, the use of the budget as a labor control device depends upon the extent to which it is predicated upon dependable standards.

Labor Standards. The establishment of labor standards is a responsibility of the production department. Production executives or engineers are presumably the best qualified to determine the amount of labor time required to perform a production operation. The method of setting such standards has been extensively covered in the literature of production management and is beyond the scope of this book. Many concerns have created a standards department whose entire effort is directed to the continuous improvement and refinement of standards. The type of labor standards actually in use vary from general relationships between the number of labor hours used and the unit volume of production, to the exact time allowed for a specific machine or manual operation. In most plants a considerable range in the degree of refinement of labor standards is necessary in covering the entire operations. Obviously, the degree of definiteness of responsibility and certainty of control depends upon the degree of refinement of the standards. Sound judgment based on practical experience is necessary to determine the degree of refinement most profitable.

An example will serve to illustrate how the industrial engineers or standards men coordinate their work with that of the accountant. Assume that in the grinding system of a powder plant, the industrial engineers establish the following requirements through time study:

Required Crew per Shift:
- 1 Drum dumper
- 2 Mill operators
- 1 Packer
- ½ Handler

Makeup of Operating Hours:		
Actual processing	6.5	
Cleaning	.5	
Maintenance, conflict, etc.	1.0	
Total	8.0	
Lbs. to be handled per shift (8 hours)		1,600
Lbs. per man-hour (standard) $\left(\frac{1,600}{4\frac{1}{2} \times 8}\right)$		44.4

Upon receipt of the information and after review by the accounting staff, the standard labor cost would be calculated (on standard cost sheets):

Operator	No.	Man-Hours	Rate per Man-Hour	Total Cost
First Shift				
Drum Dumper	1	8	$1.60	$ 12.80
Mill Operators	2	16	1.75	28.00
Packer	1	8	1.50	12.00
Handler	½	4	1.40	5.60
Second—Third Shifts				
Drum Dumper	2	16	1.65	26.40
Mill Operator	4	32	1.80	57.60
Packer	2	16	1.55	24.80
Handler	1	8	1.45	11.60
Total				$178.80
Direct Labor Cost per Cwt. ($178.80 ÷ 48)				$ 3.725

The rates applied are those from the union contract. If the agreement called for premium payments on Sunday as such, for example, this would have to be considered.

Revision of Labor Performance Standards. Generally, performance standards are not revised until a change of method or process occurs. Since standards serve as the basis of control, the accounting staff should be on the alert for changes put into effect in the factory but not reported for standard revision. If the revised process requires more time, the production staff will usually make quite certain that their measuring stick is modified. However, if the new process requires less time, it is understandable that the change might not be reported promptly. Each supervisor naturally desires to make the best possible showing. The prompt reporting of time reductions might be stimulated through periodic review of changes in standard labor hours or costs. In other words, the current labor performance of actual hours compared to standard should be but one measure of performance; another is standard time reductions, this, too, measured against a goal for the year.

It should be the responsibility of the controller to see that the standards are changed as the process changes in order to report true performance. If a wage incentive system is related to these standards, the need of adjusting for process changes is emphasized. An analysis of variances, whether favorable or unfavorable, will often serve to indicate revisions not yet reported.

While standard revisions will often be made for control purposes, it may not be practical or desirable to change product cost standards. The differences may be treated as cost variances until they are of sufficient magnitude to warrant a cost revision.

Labor Variances and Causes. There is usually little value in comparing the actual labor cost with the budgeted cost. The budget is an estimate of the labor cost justified by an anticipated volume of production. If the actual volume of production is different from that budgeted, the labor cost may be expected to vary in like degree; hence, the difference between actual and budget may be merely an indication that production volume was more or less than anticipated. What is needed to assist production executives in the control of labor is a detailed analysis of the differences between the actual labor cost and what the costs should have been, for the actual volume of production or operations, and the causes of these variances. Where labor standards are available, such analysis can be made; where such standards have not been established, an estimate must be made by production executives as to what the labor cost should have been, or the budget figures must be proportionately increased or decreased to reflect the changes in production. The absence of standards with the consequent dependence upon estimates usually leaves management in some doubt as to whether labor cost variances are the result of careless estimates or careless work.

In general, there are two causes of labor variances. Either the work takes more time than allowed by the standard or a higher price is paid for labor than called for by the standard. In either case there may or may not be a justification for the variance. Excessive time results from such causes as:

1. Inefficient workers.
2. Wasted time.
3. Faulty scheduling of work.
4. Poor supervision.
5. Defective materials.
6. Defective tools or equipment.
7. Idle time.
8. Excessive number of learners.
9. Poor working conditions.

Excessive rates of pay result from:

1. Increases in general scale of wages.
2. High-priced workers on low-priced work.
3. Overtime rates.
4. Hourly rate guarantees.

It is apparent that some of these causes of high cost are the fault of the workers, others are the fault of management or supervision, and still others, such as increases in the general scale of wages, may lie beyond the control of either. In any variance from a standard, the dependability of the standard itself must be questioned; once this is assured, responsibility must be definitely placed and immediate action taken, in so far as the factors are controllable, to prevent its continuance.

Labor Reports. Labor is an elusive cost and its waste must be detected and corrected immediately if excessive costs are to be prevented. In those departments and for those workers who are performing at or near standard, no reports are necessary. For those who fall below, reports must be made promptly—often daily, showing the extent, cause, and responsibility for the failure. Such reports must serve as the basis for immediate corrective action. Summary reports showing the general performance of departments and major divisions should be prepared at less frequent intervals, usually weekly or monthly.

These summary reports should present such information as the following:

1. Percentage of actual performance to standard.
2. Output in units per labor hour and percentage of standard.
3. Output in units per labor dollar and percentage of standard.
4. Ratio of indirect labor hours to direct labor hours and percentage of standard.
5. Ratio of indirect labor cost to direct labor cost and percentage of standard.
6. Average earnings per man.
7. Rate of labor turnover and analysis of causes.

This type of information should be reported for individual departments and for the business as a whole.

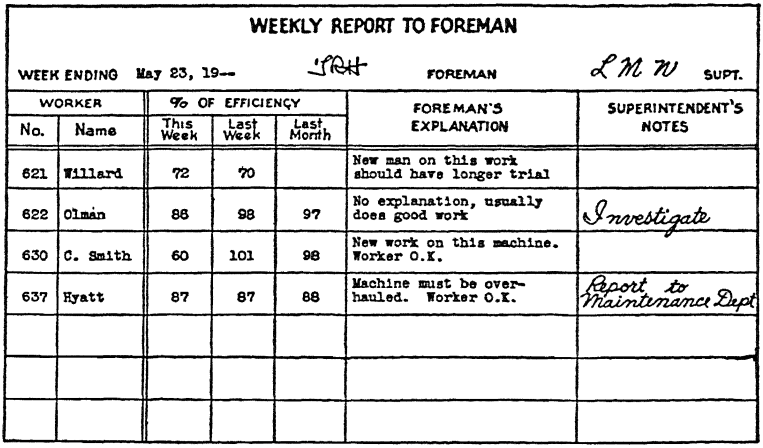
Some operations lend themselves to daily reporting. Through the use of tabulating equipment or other means, daily production may be evaluated and promptly reported upon. A simple form of daily report, available to the plant superintendent by 10:00 A.M. for the preceding day's operations, is shown as follows:

_________ PLANT
DAILY LABOR REPORT
For Day Ending at 4:00 P.M. on (Date)

	Department	Man-Hours Actual	Man-Hours Standard	% Standard to Actual
51	Fabricating	2,322	2,360	101.6
52	Subassembly	1,846	1,821	98.6
53	Painting	492	500	101.6
54	Assembly	3,960	4,110	103.8
55	Polishing	2,120	2,060	97.2
56	Packing	970	1,320	136.1
	Total	11,710	12,171	103.9

If required, the detail of this summary report can be made available to indicate on what classification and shift the substandard operations were performed.

Figure 32 illustrates a weekly report prepared for foremen, showing below standard performance for individual men.



WEEKLY REPORT TO FOREMAN

WEEK ENDING May 23, 19-- JRH FOREMAN LMW SUPT.

WORKER		% OF EFFICIENCY			FOREMAN'S EXPLANATION	SUPERINTENDENT'S NOTES
No.	Name	This Week	Last Week	Last Month		
621	Willard	72	70		New man on this work should have longer trial	
622	Olman	86	98	97	No explanation, usually does good work	Investigate
630	C. Smith	60	101	98	New work on this machine. Worker O.K.	
637	Hyatt	87	87	88	Machine must be overhauled. Worker O.K.	Report to Maintenance Dept

FIGURE 32. Weekly Labor Report to Foreman

Control Through Preplanning. The use of the control tools previously discussed serves to point out labor inefficiencies *after* they have happened. Another type of control requires a determination as to what should happen and makes plans to assure, to the extent possible, that it does happen. It is forward-looking and preventive. This approach, which embodies budgetary control, can be applied to the control of labor costs. For example, if the manpower requirements for the production program one month hence can be determined, then steps can be taken to make certain that excess labor costs do not arise because too many men are on the payroll. This factor can be controlled; thus the remaining factors are rate and quality of production and overtime. Overtime costs can be held within limits through the use of authorization slips.

The degree to which this preplanning can take place depends on the industry and particular conditions within the individual business firm. Are business conditions sufficiently stable so that some reasonably accurate planning can be done? Can the sales department indicate with reasonable accuracy what their requirements will be over the short run? An application might be in a machine shop where thousands of parts are made. If production requirements are known, the standard man-hours necessary can be calculated and converted to manpower. For example, tabulating equipment may be utilized to determine standard man-hours by department. Where experience reveals that standard efficiency cannot be attained, an allowance would be made for the predicted degree of efficiency. Thus, if 12,320 standard man-hours are needed for the planned production, but efficiency of only 80% is expected, then 15,400 actual man-hours must be scheduled. This requires a crew of 385 men (40 hours per week). Steps should then be taken to assure that only this number is authorized on the payroll. Of course, sight must not be lost of the probable requirements, say one month from now.

Chapter 14

MANUFACTURING EXPENSE BUDGET— GENERAL PROCEDURE

General Aspects

Importance of Manufacturing Expenses. The so-called prime costs of manufacture, direct labor and direct material, have been discussed in the preceding two chapters. That residual part of the cost of manufacturing, which does not enter directly into the product or which for practical reasons is not chargeable directly to the product, is classified as manufacturing expenses. It is a collective term which encompasses numerous elements of cost, viz., depreciation, amortization, power, fuel, property taxes, insurance, social security taxes, supplies, indirect labor, repairs, to mention only a few.

In our highly mechanized industry this cost component has become an increasingly larger factor in relationship to the total costs of production. As the investment in machinery and equipment has grown, so also the relative importance of depreciation, maintenance, power, indirect labor, and similar expenses has become correspondingly greater. Moreover, with the heightened complexities, business has found it necessary to add staff departments for functions such as quality control, production control, material control, and a host of others. Consequently, this expanding field of manufacturing overhead offers interesting opportunities for budget and other control applications.

Difficulties in Establishing a Manufacturing Expense Budget. The very nature of manufacturing expenses has rendered the budgeting and control of this cost element somewhat more difficult than the other production factors. Several reasons explain why.

In the *first* place, there are innumerable items of cost, each often of small consequence at the point of application, each originating from different sources, and each requiring different methods and time of control. This inflow of cost, by reason of these characteristics, contributes to the problems of budgeting and control.

The *second* difficulty arises because responsibility for control is widely distributed throughout the organization. The expenditures of direct material and labor are usually under the immediate supervision of the production foremen and department heads who may be expected to detect the grosser wastes even without the aid of control devices; but the responsibility for burden items is distributed between general executives, service department heads, and producing department heads, no one of whom accepts the full responsibility. For example, the purchasing agent may buy an uneconomical grade of coal, the head of the power department may expend unnecessary amounts for supervision, and the head of the stamping department may waste power; the net result is a high cost of power, the full import of which is not apparent to any one individual. It will not be detected as readily as a comparable waste of raw materials.

In the *third* place, the individual items of cost making up this composite called overhead behave in differing ways as the level of plant activity changes. It therefore becomes more painstaking to discover just what total expense is justified by the current volume of production. Quite often, as volume increases in response to seasonal demands or general improvement in business, there is an unjustified liberality in authorizing expenditures, and a corresponding failure to reduce them after the demand has passed. The program of budgetary control must give consideration to the necessary expenditures within the range of probable production volume. Standards must be established to measure the cost justified by the actual production volume.

Finally, there is one other aspect of manufacturing expenses which raises problems as to the *time* of control, and which might demand a somewhat different approach—a somewhat broader and forward-looking viewpoint—than that needed in the *day-to-day* control of direct labor or direct material. That characteristic is this: the manufacturing expense includes numerous long-term cost commitments such as those arising from investment in plant and equipment. It is extremely important that such commitments be subjected to the most careful study and restricted to those which are justified by the long-term outlook for sales of products. The budget is the chief device by which such commitments are controlled. But plans for keeping expenses within bounds must be made long before the depreciation or maintenance charges appear in the monthly statement. (This phase is discussed fully in Chapter 22.)

Two Elements of Manufacturing Expense. It is well to reiterate and re-emphasize that phase of expense behavior which is discussed in Chapter 5 in its application to all types of expenses—not merely with reference to manufacturing expenses. To restate the point: Manufacturing expense consists of two distinct elements—variable and fixed. The only point of similarity between these elements is that their ultimate inclusion in the cost of the products manufactured is accomplished by means of apportionment rather than by direct charge. In all other respects they are entirely dissimilar. For example, variable costs vary in direct proportion to volume, fixed costs do not; variable costs can be assigned to operating periods with reasonable accuracy, fixed costs must be assigned by more or less arbitrary methods; the responsibility for variable costs lies chiefly with production operating heads, the responsibility for fixed costs is largely with general executives; variable cost assigned to an operating period is fully absorbed in the production cost of that period, fixed cost may or may not be so absorbed.

Perhaps it should be stated also that most manufacturing expenses considered to be variable do not vary simply because of changes in the production level. Rather, the reverse may be said to be true; namely, that changes in production volume lead management to make certain decisions which cause costs to be variable—or fixed, as may be applicable. In other words, within given limits cost behavior may be established by management decision.

The failure to differentiate clearly between the fixed and variable classes of burden is responsible for much of the confusion and useless results of cost accounting. The customary procedure of cost accounting is to classify the production costs as:

Direct material.
Direct labor.
Burden.

The burden is usually applied to the product manufactured by means of all-inclusive burden rates which absorb both variable and fixed burden elements. Such a plan seldom gives satisfactory results. A far better plan is to classify the costs into:

Direct material.
Direct labor.
Variable burden.
Fixed burden or *period* costs.

The distinction between variable and fixed burden elements should be maintained throughout the various steps in the costing process. It would then be possible to ascertain what part of the cost of sales and of the work in process and finished inventories consists of direct material and labor and variable burden, and what part represents an absorption of fixed costs. Such information is extremely useful in developing managerial policies. Such a plan of cost accounting requires the use of dual burden rates—one for variable burden and one for fixed burden—and the extension of such rates to all service and operating departments and to all production operations.

Certainly it would be in order to declare that the segregation of manufacturing expenses into the fixed and variable elements is a requisite to effective managerial accounting. This treatment of expense, which is a part of the marginal approach to business planning, is one of the more important advances made in recent years toward the intelligent use of cost information. Of course, the more flexibility which is introduced into a system of control, the greater is the research and analysis necessary to discover sound methods.

Budgeting and "Direct Costs." The separation of manufacturing expenses into the variable and fixed elements is closely related to the principle of direct costing. The basic characteristics and significance of this technique have been well stated as follows:[1]

> Direct costing should be defined as segregation of manufacturing costs between those which are fixed and those which vary directly with volume. Only the prime costs plus variable factory costs are used to value inventory and cost of sales. The remaining factory expenses are charged off currently to profit and loss. However, the point to be emphasized is that direct costing is primarily a segregation of expenses and only secondarily a method of inventory valuation. By this approach, full attention can be directed to the effect which direct costing has on the profit and loss statement and supplementary operating reports.

It is the experience of the authors that the direct costing approach in budgetary planning and control is particularly helpful in making business decisions because the requisite information is readily available and, of at least equal importance, is better understood by management. Data presented in such a manner permits ready evaluation of any proposal which affects sales make-up or sales volume. It facilitates and quickens the consideration of several alternatives in the planning process. For example, the effect on operating profit of a 30% increase in sales volume is ascertainable merely by an extension of the additional units times the net excess of the unit sales price over direct costs, including direct selling expense. Such a determination cannot be made without special analysis when the usual "absorption costs," which include fixed costs, are the only ones readily available.

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[1] W. W. Niekirk, "How Direct Costing Can Work for Management," *N.A.C.A. Bulletin,* Vol. XXXII, No. 5, Section 1, January, 1951, p. 525.

In summary, direct costing as applied to budgetary planning and control performs these services:

a) Segregates actual cost data in a manner parallel with the budget structure or application, with resulting improvement in control possibilities.
b) Accelerates better planning[2] by revealing *more quickly* the effect of alternative choices of action.
c) Clearly reveals the marginal income by segments being measured, viz., territory, product, salesman, channel of distribution, etc.—for planning and control purposes.
d) Sets out prominently the fixed charges which must be covered in order to earn a profit, and indicates effect of management decisions on this condition—a significant disclosure for long-term decisions.

Practicality of Flexible Manufacturing Expense Budgets. Generally speaking, the principle of flexibility has been applied more widely, or at least more numerous attempts have been made to introduce it, in the field of manufacturing expenses than in the other expense areas. As would be expected, some objections have been raised. Therefore, before examining in any more detail the methodology as applied to manufacturing expenses, it is in order to review the more commonly voiced criticisms. The more serious contentions heard by the authors are essentially these:

(1) That the introduction of flexibility is a poor substitute for sound planning.
(2) That flexibility is in conflict with the principle of continuous employment.
(3) That flexible budgets are not in fact a basis for cost control at the point of application.

Consider, first, the argument that flexibility is a poor substitute for sound planning. Chapter 5 is devoted almost exclusively to the application of the flexible principle to each of the planning, coordinating, and controlling functions of a business enterprise. The *need* for planning has been reiterated. Business must plan, with or without flexible budgets. Unfortunately, no present day business management, nor indeed any management, is sufficiently clairvoyant to predict the future with certainty, and to control all events so that inexorably the objective is always attained. It is self-evident that when the fortunes of a business turn less favorable than expected, reductions in costs or increases in income must be made, or the business will not long survive. The assumption that flexibility must be introduced at the whim of management, because of improper planning, is not warranted by the facts.

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[2] For the full impact of direct costing on profit planning, see Chapters 24 and 25.

Another argument relates to continuous employment. Chapter 11 emphasizes the idea that stabilized employment can be achieved to a much greater degree through adequate planning which permits the leveling out of production through the buildup of inventories. However, merely to enforce stabilized employment without regard to the financial condition of the business is to invite disaster. Through merit rating plans, most companies already have an incentive to stabilize employment. Moreover, salaries and wages are not the only costs subject to variability. What about supplies, or power, or repairs, etc.? Is the principle not applicable here?

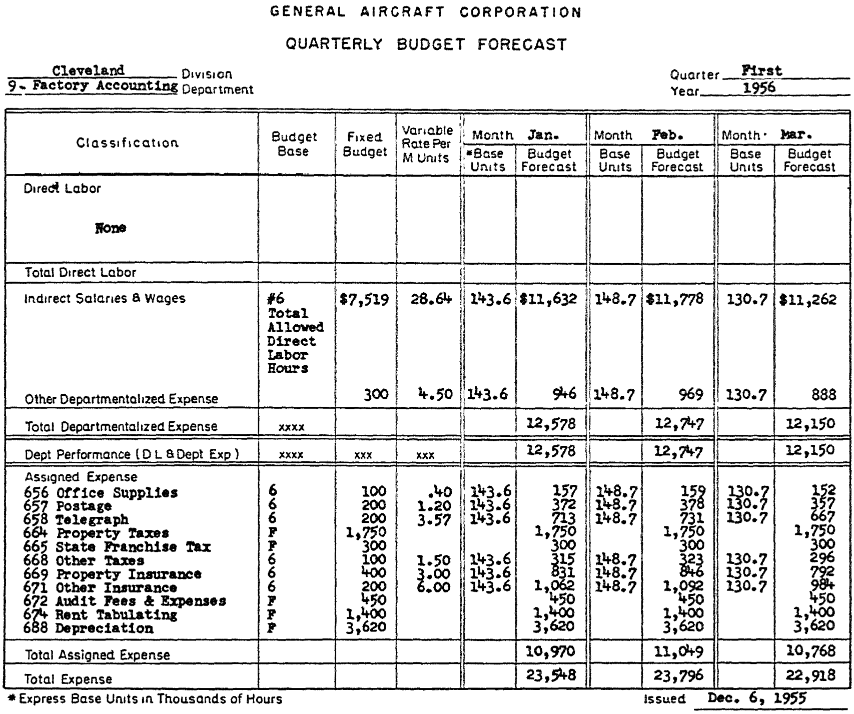
Flexibility and Control. The argument that flexible budgets cannot be a basis for cost control at the point of application is worthy of more analysis. A typical illustration in support of the impracticality of the flexible budget is the situation where the foreman is told, *after the fact,* that his operating level was 80% of normal production volume and accordingly that the budget is "X" dollars. It is stated that he must know in advance what his level of operations will be. Moreover, it is avowed that this front line supervisor cannot reduce his work crew tomorrow, increase it two days later, and cut back in the following week—all within budget. Severance pay, unemployment insurance, and other costs incident to hiring and terminations are stated to produce an impossible situation.

Granted that the task is difficult, and granted that 100% flexibility cannot always be attained. Yet, on the basis of experience, there are sufficient means at the disposal of an intelligent management to make the flexible budgeting of manufacturing expenses reasonably effective and reasonably rewarding in its application. Some examples are offered.

1. The top echelon of management can and must advise the operating staff of proposed changes in production levels so as to permit an orderly adjustment in costs. Some companies, as an illustration, prepare on about the twentieth of each month a control budget for the following month setting forth the operating level at which production will be held, and the costs necessary. The staff is judged against the budget so established.

   Another firm insists that expense levels be held at a level measured by standard labor hours of actual output, but prepares a quarterly forecast to indicate the approximate level of activity and the approximate budget allowances which will be granted. The form of notification to the department manager or foreman is shown in Figure 33.

2. As special circumstances arise, special allowances can be granted. For example, a major breakdown not the responsibility of the foreman must be handled budget-wise by an allowance equal to actual cost.



GENERAL AIRCRAFT CORPORATION

QUARTERLY BUDGET FORECAST

Cleveland Division
9- Factory Accounting Department
Quarter First
Year 1956

Classification	Budget Base	Fixed Budget	Variable Rate Per M Units	Month Jan.		Month Feb.		Month Mar.	
				*Base Units	Budget Forecast	Base Units	Budget Forecast	Base Units	Budget Forecast
Direct Labor None									
Total Direct Labor									
Indirect Salaries & Wages	#6 Total Allowed Direct Labor Hours	$7,519	28.64	143.6	$11,632	148.7	$11,778	130.7	$11,262
Other Departmentalized Expense		300	4.50	143.6	946	148.7	969	130.7	888
Total Departmentalized Expense	xxxx				12,578		12,747		12,150
Dept Performance (D L & Dept Exp)	xxxx	xxx	xxx		12,578		12,747		12,150
Assigned Expense									
656 Office Supplies	6	100	.40	143.6	157	148.7	159	130.7	152
657 Postage	6	200	1.20	143.6	372	148.7	378	130.7	357
658 Telegraph	6	200	3.57	143.6	713	148.7	731	130.7	667
664 Property Taxes	F	1,750			1,750		1,750		1,750
665 State Franchise Tax	F	300			300		300		300
668 Other Taxes	6	100	1.50	143.6	315	148.7	323	130.7	296
669 Property Insurance	6	400	3.00	143.6	831	148.7	846	130.7	792
671 Other Insurance	6	200	6.00	143.6	1,062	148.7	1,092	130.7	984
672 Audit Fees & Expenses	F	450			450		450		450
674 Rent Tabulating	F	1,400			1,400		1,400		1,400
688 Depreciation	F	3,620			3,620		3,620		3,620
Total Assigned Expense					10,970		11,049		10,768
Total Expense					23,548		23,796		22,918

* Express Base Units in Thousands of Hours

Issued Dec. 6, 1955

FIGURE 33. Quarterly Budget Forecast

3. Multiple rate budgets may be necessary. As the level of operations, or number of shifts, or number of operating days per week vary, a single fixed cost allowance or a single variable rate may be insufficient. Separate rates for the various types of operations may be found necessary—each designed to best measure the performance of the supervisor under the actual conditions experienced.
4. Proper accounting by responsibility might require that severance pay, for example, would not be a departmental charge against Mr. "X," but a cost of his superior. While some such circumstances could be regarded as mere cost transfers, the benefits are (*a*) that actual expenses are reduced, and (*b*) the method does not penalize

a department manager for costs beyond his control. A similar result for this last benefit can be secured through a special budget allowance.

In summary, to make the flexible budget an effective control tool, good communication must exist at all levels in the organization. Moreover, the budget staff must exercise good judgment in the *how* of the problem. The psychological benefits of the flexible budget are good because each supervisor is kept "on his toes," if budget adjustments are made as production levels change, and he is required to meet the new level. The tie-in of budget performance to an incentive plan makes the control tool even more effective.

Manufacturing Expenses in Relation to Volume. The crux of the solution to any problem relating to the budgeting and control of manufacturing expenses lies in a proper separation of fixed and variable expenses. How can this best be accomplished? There are three general approaches to the measurement of cost variation with volume:[3]

1. Inspection of the company's chart of accounts, and assignment of costs to the fixed or variable category, according to the type of cost represented by each account.
2. Statistical analysis of previously recorded costs to determine how costs actually have varied with volume.
3. Industrial engineering studies to determine how costs should vary with volume.

All three methods may be utilized profitably in a given company, for each has certain areas of application as well as certain weaknesses.

Several general propositions are relevant to a study of cost behavior. To restate a comment made earlier, costs are not necessarily variable or fixed by inherent nature alone. Rather, these characteristics may be acquired by reason of managerial decisions. For example, management may decide that a given number of key employees constitute an irreducible minimum. However, a year later the opinion may change by reason of changed conditions or otherwise. Likewise, decisions as to accounting practice may effect the segregation. Thus, a unit-of-output method of depreciation might be employed to allocate the cost of equipment to the production. This would be reflected as variable expense behavior in the records. If, however, a straight-line method of depreciation were used, the expense would assume the character of a fixed cost. Of course, it would be a question of fact as to whether time or usage, or both, was the primary determinant of the physical life of the equipment. Finally, the separation of costs into fixed and variable categories cannot be completely accurate. There are always borderline cases. However, these areas of doubt usually can be reduced so as not to affect the validity of the results in planning and control applications.

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[3] Adapted from "The Variation of Costs with Volume," Research Series No. 16, *N.A.C.A. Bulletin,* Vol. XXX, No. 20, June 15, 1949.

Reviewing the Chart of Accounts. In the process of determining which manufacturing expenses are fixed and which are variable, a simple first step is a review of the chart of accounts or a set of reports. By the description of the accounts, and with a knowledge of the business' practices, many of the costs may be immediately classified as either fixed or variable. Others will fall in the semivariable category and must be further analyzed to determine the specific nature. This method should be considered as an indicator only. For the analytical accountant, the results are order-of-magnitude answers only. Merely in a preliminary way can the solution be known.

Analysis of Past Experience. A more satisfactory method, a more reliable answer, would seem to require an analysis of past experience. Such a review may be applied to total departmental expenses, or it may be extended to each account, or selected groups of accounts, within each department. A very simple but satisfactory technique is the use of scatter charts, as explained on pages 64 to 66. Simple mathematical determinations, illustrated on page 62, also may prove helpful.

The results found by past experience must take into account those conditions not expected to be similar in the future period, including, but not limited to, the following:[4]

1. *Changes in plant and equipment.* Depreciation, insurance and property taxes, for example, might increase with additional equipment investment. The usually more flexible costs may have a tendency to decrease, under such circumstances.
2. *Changes in products made, methods of manufacture, or materials used.* Such circumstances would cause an alteration to the historical cost pattern. Experience after such changes, together with estimates of expected expense levels, may be used.
3. *Changes in organization, personnel, working hours, or efficiency.* For example, cost control may have been lacking. Recognition should be given to the new practice.
4. *Changes in prices paid for cost factors.* If significant changes have taken place in the price level, adjustments must be made to state

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[4] *Ibid.,* pp. 1230-33.

costs at the same price level throughout the period, or at the price level expected to prevail.

5. *Changes in management policy.* Thus, management might consider a given-sized maintenance crew fixed at a normal level of activity. This practice could be changed. Changes in financial policy likewise could have an effect. A strong financial position might permit an extensive employee training program, etc.
6. *Lag of production.* Another reported complication is the delay between cost incurrence and completion of the production unit. In long manufacturing processes, a problem can exist.
7. *Random fluctuations.* Finally, the period being examined may evidence unusual deviations resulting from such nonrecurring events as strikes, wars, etc.

Good judgment must be exercised in adjusting for such factors to arrive at the necessary correlation or relationship between expenses and the activity measure.

Engineering Studies. A third method employed in determining the proper variation of costs with volume is the use of engineering studies. Obviously, studies or estimates must be made in the absence of past experience. Such estimates or synthesis of costs also can serve as a check against the analysis of past experience. For example, if the results of past performance are considered poor, and the indicated expense level is "tightened," the results of engineering studies may be checked against it. Whether these so-called engineering studies should be regarded as a separate method, or whether they are an adjunct to the usual analysis that the accountant would require—such as in setting standards—is a debatable question.

Under ordinary circumstances, this third approach would require estimates of physical quantities—manpower, supplies, maintenance, electrical power, etc.—at varying production levels. These data, together with other necessary information, would then be translated by the accountant into cost levels and rates.

The Activity Base. Regardless of which analytical approach is used to determine the variable rate, it is essential that the proper measure of activity be selected. Oftentimes, poor correlation between expenses which should be variable and the unit of activity is due to the use of an improper measuring stick. The subject is discussed on page 58. However, some commonly accepted bases for manufacturing expenses include:

1. Standard man-hours.
2. Standard machine hours.

3. Units of output.
4. Direct labor dollars.
5. Pounds of material consumed.

Classification of Manufacturing Expenses. A prerequisite to the most effective budgeting of manufacturing expenses, then, is a proper classification of costs. The incorporation in the books of account of an expense segregation according to variability with volume, permits the development of desired relationships in the regular accounting statements. Moreover, such a practice facilitates flexible budgeting. If a company does not wish to fully incorporate the twofold split, a *general* or approximate breakdown into the fixed and variable groups is possible.

An illustrative chart of accounts wherein fixed and variable expenses are segregated is as follows:

5100 VARIABLE MANUFACTURING EXPENSES
- 5101–1 Labor—Hourly—St. Time
- 5101–2 Labor—Hourly—Bonus
- 5101–3 Labor—Hourly—Overtime Penalty
- 5102 Salaries
- 5103 Provision for Vacation Pay
- 5104 Payroll Taxes
- 5105 Workmen's Compensation Insurance
- 5107 Health and Accident Insurance
- 5108 Provision for Retirement Expense
- 5110 Fuel
- 5111 Power
- 5134 Cartons and Containers
- 5135–1 Repairs—Material
- 5135–2 Repairs—Outside Labor
- 5135–3 Repairs—Labor and Overhead
- 5139 Rent
- 5140 Supplies
- 5141 Safety Supplies
- 5142 Auto Trips
- 5143 Postage
- 5144 Samples
- 5145 Spoilage, Salvage, and Reclamation Expense
- 5160 Telephone and Telegraph
- 5162 Laundry
- 5163 Dues and Subscriptions
- 5164 Auto Expense

5170 Legal and Professional
5180 Taxes—Sales and Use
5181 Taxes—Federal Transportation
5182 Taxes—Excise
5190 Recreation and Welfare Expense
5191 Miscellaneous
5192 Royalties

5200 FIXED MANUFACTURING EXPENSES (General Management Level)

5202–1 Salaries—Executive
5204 Payroll Taxes
5208 Provision for Retirement Expense
5239 Rent
5270 Legal and Professional
5285 Taxes—Property
5289 Insurance—Property and Liability
5295–1 Depreciation—Buildings
5295–2 Depreciation—Machinery and Equipment
5295–3 Depreciation—Laboratory Equipment
5296–1 Amortization—Machinery and Equipment
5299 Amortization—Patents

5300 FIXED MANUFACTURING EXPENSES (Production Level)

5301–1 Labor—Hourly—St. Time
5301–2 Labor—Hourly—Bonus
5301–3 Labor—Hourly—Overtime Penalty
5302 Salaries
5303 Provision for Vacation Pay
5304 Payroll Taxes
5305 Workmen's Compensation Insurance
5306 Health and Accident Insurance
5308 Provision for Retirement Expense
5311 Power
5335–1 Repairs—Material
5335–2 Repairs—Outside Labor
5335–3 Repairs—Labor and Overhead
5339 Rent
5340 Supplies
5341 Safety Supplies
5342 Auto Trips
5343 Postage
5360 Telephone and Telegraph

5363 Dues and Subscriptions
5380 Taxes—Sales and Use
5381 Taxes—Federal Transportation
5382 Taxes—Excise
5392 Royalties

Any such classification as the foregoing must, of necessity, be only illustrative, since the question as to whether a particular burden item varies directly with physical volume of production or remains fixed regardless of volume depends upon the nature and methods of operations peculiar to the individual concern. Royalties, for example, are shown as a variable cost but will, in some instances, constitute a fixed cost. On the other hand, depreciation on some items of equipment and amortization of patents may be variable costs.

It will be noted that fixed costs are further classified as to those which are beyond the usual control of production executives and those which are currently fixed by the production executives. Such a classification assists in the ultimate control of the fixed costs.

The chart of accounts shown on the preceding pages segregate manufacturing expenses by type of expense and by fixed and variable characteristics. Of course, this same breakdown must extend to each service department and to each production department in order to place responsibility for excess costs, and in order to secure the total variable and/or fixed expense by the segment being analyzed.

Semivariable Expenses. Some of the manufacturing expenses have characteristics of both fixed and variable expenses. That is, they may vary with volume of production but not in direct proportion. Again, some costs are fixed up to a certain level, but are semivariable beyond that point. The method of analyzing such expenses is discussed generally in Chapter 5. A few additional remarks may be helpful in understanding the expense behavior.

One reason for the apparent existence of these semivariable expenses may result from the chart of accounts used in a particular business. Most companies have set up accounts on the basis of nature of expense, or object of expenditure. For example, maintenance labor may be charged into a single account in each department, albeit that the cost includes (1) the minimum organization necessary to hold the plant in readiness to operate, and (2) maintenance costs above such a level, which are in fact variable in nature. For this reason the breakout of fixed and variable expenses in the accounts is desirable.

A second reason which causes some manufacturing expenses to exhibit semivariable characteristics is the inability for production to move in small increments. For example, above a given level of operation, it may be necessary to add an entire shift to meet production demands. Under such circumstances, the graphic representation of such costs would be a series of steps. Where these distinct changes cannot be handled by the usual variable plus fixed allowances, it may be necessary to establish multiple budgets, wherein different cost allowances are granted depending on the type of operation.

The Budget Period. At this point a question might be raised as to how long the budget period should be for manufacturing expenses. As a general statement, the estimates of expense for forecast purposes would cover the same period as the sales forecast, i.e., by months or quarters for a twelve-month period in the typical case. Long-range plans, however, will extend over a longer period, perhaps five years.

For control purposes, the question of length of period is of less significance. As will be seen later, the variable manufacturing expense budget is often expressed as a *unit budget,* and time is not a factor. In the fixed expense category, the budget period is perhaps of less significance than the method selected to apportion charges to fiscal years, etc.

Responsibility for the Manufacturing Expense Budget. Another question of general application relates to the responsibility for preparing the manufacturing expense budget. It would appear that at least three conditions must be met:

1. The budget should be based on technical data that are sound from the manufacturing viewpoint.
2. Those to be measured by the budget, those responsible for controlling the expenses—the production supervisors—must be given an opportunity to review, understand, and express approval as to the fairness of the measuring stick.
3. The budget structure should be prepared on a basis consistent with sound accounting practice.

To achieve these conditions will require the cooperative effort of at least three groups. First, the industrial engineers, or process engineers, must supply the necessary technical data in terms of physical units. For example, the following information is typical of facts that are needed for each department, operation, or product, as may be applicable:

1. Crew size, or manpower requirements.
2. Running rates or time requirements.
3. Stages in the process.
4. Power requirements.

5. Maintenance needs, and other downtime data.
6. Supplies required.
7. Needs from various service departments.

Second, this technical data, and the related cost figures, should be reviewed with the department managers so that the budget base is fully understood and accepted. Third, the determination of the fixed and variable components, and the translation of the technical information in budget allowances, should be handled by the accounting group. This synthesis is best placed in the budget or cost department, depending on organization structure, for several reasons. Much of the needed data is outside the engineering orbit, viz., insurance rates and coverage, depreciation bases, tax bases, etc. Furthermore a detailed knowledge of the accounting methods is needed. Finally, all the actual information flows to this same source, so that a single agency is in a better position to coordinate practice and promote uniformity for each department.

The budget department would also use these budgets in making the required periodic forecasts.

Revision of Manufacturing Expense Budgets. Generally speaking, the expense structure of a company does not change greatly within a year. For this reason it is usually satisfactory to review budget bases annually and make revisions at that time. However, if any basic changes do take place during the year, it may be necessary to revise the budgets so that they will continue to be effective control tools.

A standard procedure should be established, and a standard form developed, to make these interim adjustments, or even the annual changes.

Controlling Manufacturing Expenses. The basic approach in controlling factory overhead is to set budget standards of performance and operate within these limits. Two avenues may be followed to accomplish this objective: one involves the preplanning or preventive approach; the other, the after-the-fact approach or reporting unfavorable trends and performance.

Preplanning can be accomplished on many items of manufacturing overhead expense in somewhat the same fashion as discussed in connection with direct labor. For example, the crews for indirect labor can be planned just as well as the crews for direct labor. The preplanning approach will be found useful where a substantial dollar cost is involved for purchase of supplies or repair materials. It may be found desirable to maintain a record of purchase commitments, by responsibility, for these accounts. Each purchase requisition, for example, might require the approval of the budget department. When the budget limit is reached, then no further purchases would be permitted except with the approval of much higher authority. Again, where stores or stock requisitions are the source of charges, the department manager may be kept informed periodically of the cumulative monthly cost, and steps may be taken to stop further issues, except in emergencies, as the budget limit is approached.

Ingenuity can be exercised by the budget supervisor in assisting the department managers to keep within budget by providing timely and pertinent information.

The usual after-the-fact reporting is discussed in later sections. Fundamentally, however, the principle is to report unfavorable trends and permit corrective action before they develop into large losses.

Chapter 15

MANUFACTURING EXPENSE BUDGET—APPLICATION

Variable Burden Costs

Nature of Variable Burden Expenses. By definition, variable costs are those which tend to increase or decrease proportionately with changes in volume. For control purposes, and for many other budgeting or accounting applications, variable costs, whether expenses or otherwise, are expressed as standard unit allowances. Thus, a supply allowance of a given amount per operating hour may be the basis of control. Under such circumstances, the foreman may spend any amount for supplies so long as he stays within the standard unit allowance when multiplied by the factor of variability.

Another practical observation is that different calculations of variable costs are likely to be made for different purposes. Thus, for daily, weekly, or monthly *control* purposes, it is highly probable that fewer costs would be considered variable than would be the case when considering longer term *plans.* This condition arises because supervisory expenses, for example, are more likely to be adjusted over a longer period than over a shorter one.

Problems Involved. Basically, the problems of budgeting variable manufacturing expenses are the same as those pertaining to direct material and labor costs. Specifically the objectives are:

1. To ascertain what expenditures will be required to provide the indirect materials, labor, and services necessary for the execution of the company's production program.
2. To provide information for setting burden rates.
3. To provide a means of controlling the variable burden costs.

Variable Burden Expenditures Required. Provision must be made for the purchasing and financing of the variable burden cost items. These include much of the indirect labor, supplies, and factory services and are usually of substantial amount. On the basis of the production budget, an estimate must be made of the quantity of each of these items which will be purchased and used and the prices to be paid. Usually such estimates should be made for each service and producing department separately, although some concerns follow the practice of estimating only total requirements.

Before the requirements of individual departments can be estimated, the production program for the budget period must be resolved into its departmental requirements and decisions must be made as to the amount of maintenance and construction work which is to be undertaken. When production is of a varied nature, a production program may weigh more heavily on some departments than others. This applies to both service and producing departments. An intelligent estimate of the variable burden costs cannot be made until these departmental requirements are known.

Variable Burden Rates. Most concerns find it necessary to predetermine burden rates for the purpose of currently determining their product costs. Such rates are based on the relationship of expected volume to either expected actual costs or the costs justified by the volume—the former providing actual rates; the latter, standard rates. The budget provides the information for setting these rates.

Separate burden rates should be used for variable and fixed burden. The variable burden rates should, generally speaking, absorb the actual variable burden of each operating period. The distinction between variable and fixed burden rates should be maintained throughout all burden analysis steps. For example, the power department should make separate charges to the producing departments for the variable and fixed elements of the power cost. A producing department should merge these service costs with its own variable and fixed costs in developing its departmental variable and fixed burden rates. Regardless of the number of steps through which the analysis may go, the distinction should be maintained until the twofold charges are made against the product manufactured.

Standard or estimated variable burden rates must be developed as a part of the manufacturing expense budget procedure. Such burden rates follow as a natural consequence of the budget estimates of production volume and required variable burden expenditures of each department.

Control of Variable Burden Costs. The problem of controlling variable burden costs is basically the same as that of direct material and labor. Standards must be set expressive of what the costs should be and the responsible production executives and department heads must be quickly advised of any significant variance from such standard. This analysis must be extended to each important item of variable burden cost in each service and production department. Excessive variable burden costs result from excessive prices paid for supplies, labor, and services and from the waste of such items. In so far as practicable the budget analysis should resolve the variances into such causes.

Variable Burden Cost Standards. The cost of variable burden items is a consequence of two factors—quantity used and price. Since the responsibility for these two factors is usually divided, each must be considered separately in the establishment of the standards. Thus, the grinding department may be justified in using a certain tonnage of stones for a specified quantity of production and it may be assumed that these should be procured at a certain price by the purchasing department. The final cost is the result of the two factors. If this exceeds the standard, it must be ascertained where the cause and responsibility rest.

The large number of cost items involved frequently renders this difficult. As a practical matter it is usually necessary to restrict this twofold aspect of standards to major cost items such as indirect labor, major items of supplies, power consumed, etc., and to express the standards for numerous minor items in terms of dollar cost only. Thus a standard cost may be set for numerous small items of supplies as a whole, in relation to standard labor hours. Such a standard will serve to measure the usage of such supplies so long as the price level remains substantially the same.

The standards of usage for individual variable burden items and groups of items must be related to departmental production factors which give rise to the costs, such as direct labor hours or cost, standard direct labor hours or cost, departmental production expressed in standard labor hours or cost, machine hours, units of production, units of operation, hours of operation, materials processed, etc. It is frequently desirable to use several different factors within the same department for different cost items and groups of items. For example, indirect labor hours may be related to standard direct labor hours, power consumed may be related to standard machine hours.

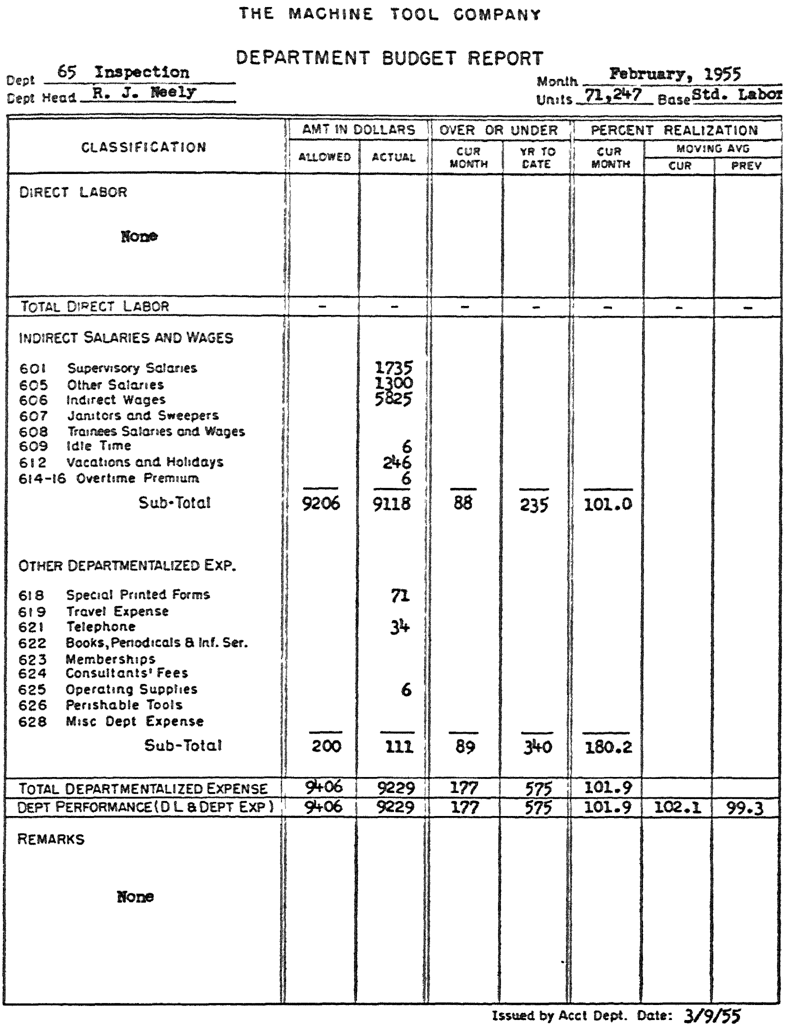
Foremen and department heads should be made thoroughly to understand the method and procedure by which the standards are set and revised and should have an active part in the program. They must be convinced that the standards are fair. When variances are revealed, pains must be taken to see that the causes are thoroughly understood and the responsibility fairly placed.

Responsibility at Source. All costs should be controlled at the source of expenditure irrespective of any subsequent distribution to other departments. The head of each service department should be held to standard costs of producing his particular service. Charges should be made against other departments for actual quantities of service used but at standard rates. Thus, the head of a producing department should not suffer from the inefficiency of the power or maintenance departments. If he uses a standard quantity of power, his power cost should not exceed standard; he should, however, be responsible for excessive quantities of services used.

Variable Burden Variances. Theoretically, the variable burden rates should absorb the actual variable burden of each month or operating period regardless of production volume. Any over- or underabsorbed variable burden represents either price or usage variance from standard and should be so analyzed in the cost and budget reports. Practically, it is seldom possible to entirely resolve the semivariable costs into their variable and fixed elements. Some small degree of semivariability is likely to remain in the variable accounts with the result that a minor part of the variance may be considered as over- or underabsorbed burden. If the analysis is made carefully, this element will be small and of insufficient consequence to nullify the value of the plan. Experience will soon indicate the extent of this over- and underabsorbed element which can be removed to an over- and underabsorbed account, leaving the remaining variances to be carried to accounts representing loss or gain on usage and price variances.

Variable Burden Reports. In order to make the control over the variable burden costs effective, the variances between the actual and budgeted costs must be quickly analyzed and reported to the production heads responsible. With some major items the usage variances must be reported daily in order that responsibility can be immediately placed on individual workers and operators. Other items may be summarized in weekly or monthly reports. Such reports should be given to the foremen and department heads responsible. The basic purpose of such reports is to indicate the results attained as compared with what should have been attained.

Figure 34 illustrates a summary monthly report for a department foreman. In support of the summary some statistical data may be given indicating the reason for *quantity* variances. In this illustration, a service department, budget allowances are computed monthly



THE MACHINE TOOL COMPANY

DEPARTMENT BUDGET REPORT

Dept 65 Inspection
Dept Head R. J. Neely
Month February, 1955
Units 71,247 Base Std. Labor

CLASSIFICATION	AMT IN DOLLARS		OVER OR UNDER		PERCENT REALIZATION		
	ALLOWED	ACTUAL	CUR MONTH	YR TO DATE	CUR MONTH	MOVING AVG CUR	MOVING AVG PREV
DIRECT LABOR							
None							
TOTAL DIRECT LABOR	-	-	-	-	-	-	-
INDIRECT SALARIES AND WAGES							
601 Supervisory Salaries		1735					
605 Other Salaries		1300					
606 Indirect Wages		5825					
607 Janitors and Sweepers							
608 Trainees Salaries and Wages							
609 Idle Time		6					
612 Vacations and Holidays		246					
614-16 Overtime Premium		6					
Sub-Total	9206	9118	88	235	101.0		
OTHER DEPARTMENTALIZED EXP.							
618 Special Printed Forms		71					
619 Travel Expense							
621 Telephone		34					
622 Books, Periodicals & Inf. Ser.							
623 Memberships							
624 Consultants' Fees							
625 Operating Supplies		6					
626 Perishable Tools							
628 Misc Dept Expense							
Sub-Total	200	111	89	340	180.2		
TOTAL DEPARTMENTALIZED EXPENSE	9406	9229	177	575	101.9		
DEPT PERFORMANCE (D L & DEPT EXP)	9406	9229	177	575	101.9	102.1	99.3
REMARKS							
None							

Issued by Acct Dept. Date: 3/9/55

FIGURE 34. Departmental Budget Report

by two groups instead of for each account. A budget is shown for indirect salaries and wages, and another for all other departmental expenses combined. Each foreman knows the basis for allowances; hence, it is not shown in the report. If some element were considered fixed and another share variable, the two budget allowances would be combined to show a total.

Another illustrative report is shown in Figure 35. Several points are worth mentioning:

CHEMICAL COMPANY

BUDGET REPORT

DEPT HEAD

MONTH June 1955

DEPARTMENT Tank Room NO 61

Page 1 of 3

DESCRIPTION	CURRENT MONTH			YEAR TO DATE		
	BUDGET	ACTUAL	OVER/UNDER	BUDGET	ACTUAL	OVER/UNDER
CONTROLLABLE EXPENSES						
01 Labor-Hourly-St. Time	$ 9,941	$ 9,665	$ 276		$ 56,531	$ (823)
" " -O.T.Penalty	396	788	(392)		7,530	(1,846)
" " -Bonus	3,410	3,315	95		19,428	(265)
Total Hourly Labor	$13,747	$13,768	$ (21)		$ 83,489	$ (2,934)
08 Vacation Pay	687	688	(1)		4,174	(147)
97-98 Payroll Taxes	377	377	-		3,214	(133)
39 Repairs-Materials	1,881	285	1,596		1,607	7,333
39 Modifications-Materials	-	-	-		275	-
39-2 Repairs-Outside L. & O.	-	-	-		308	-
39-1 Repairs-Company L. & O.	2,903	2,903	-		19,027	-
39-1 Modif. -Company L. & O.	-	-	-		1,167	-
40 Supplies	491	320	171		2,122	309
53 Overtime Meals	-	-	-		31	(31)
61 Experimental	-	-	-		2	-
75 Miscellaneous	-	-	-		(825)	-
TOTAL CONTROLLABLE EXPENSES	$20,086	$18,341	$ 1,745	$118,988	$114,591	$ 4,397
PROD. (LOSS)/GAIN-PROD. DEPTS.			(507)			(4,286)
PROD. (LOSS)/GAIN-SERV. DEPTS.			(531)			(4,487)
LOST PROD. HRS.-SERV. DEPTS.			740			2,067
LOST PROD. HRS.-FIXED EXPENSES			112			112
TOTAL MFG. EXP. PERFORMANCE			$ 1,559			$ (2,197)
MAT'L. (LOSS)/GAIN-MAT'L REPORT			(4,724)			(20,551)
TOTAL DEPT. PERFORMANCE			$(3,165)			$(22,748)
Actual maintenance man-hours- 746						
Approved production - 2,515,837#						

Notes

Depreciation expense - current month $2,825
year to date $15,512

Issued by the Budgets & Standards Department - July 12, 1955

FIGURE 35. Another Departmental Budget Report

1. The fixed depreciation charge is shown as a footnote for informational purposes only.
2. Supporting analyses are provided, usually on those cost items grossly over budget. For example, if supplies were greatly excessive, a detailed comparison of actual and budgeted supplies by type of item—in units and amount—might be made.

3. The report shows all costs for which the foreman is responsible. Service costs, at standard rates, are charged as one item only for the variance portion, i.e., excess usage (due to downtime in the illustration).
4. The costs are segregated by the four functions the foreman must control:
   - *a*) Rate of spending per hour—the upper portion of the report.
   - *b*) Rate of production per hour—the production loss.
   - *c*) Downtime—shown by lost production hours. (Details are furnished on supporting sheets.)
   - *d*) Material usage—the material loss or gain, which details are supplied on a material movement report.

Fixed Manufacturing Expenses

Nature of Fixed Costs. To reiterate, fixed manufacturing expenses originate generally from the provision of facilities and organization in a state of readiness to do business. They may be regarded as generally independent of the current production volume. The magnitude of the expenses would relate to the volume of business for which *provision has been made,* and methods selected to handle it, rather than the actual level.

An excellent statement explaining the limitations of the fixed costs concept is as follows:[1]

> 1. The fixed costs are fixed only within a limited range of volume fluctuation. This is the range which ordinarily occurs within a year or other budget period and which management expects to handle with the equipment and organization provided for in the budget. When a plant is already operating near its practical capacity any large and sustained increase in volume usually requires an expansion of manufacturing facilities with an accompanying increase in total fixed costs. Large and prolonged decreases in volume usually cause management to reduce the costs previously considered fixed. In most cases this begins by reduction in fixed personnel and ultimately extends to disposal of excess plant and equipment.
> 2. The fixed costs are based upon the expectation that prices of cost factors will remain unchanged. Changes in property tax rates, insurance rates, salaries and wages of employees constituting fixed organization, etc., bring corresponding changes in fixed costs.
> 3. The fixed costs relate to the plant and equipment available and to the organization, methods, and policies which have been established. Any important change in these may cause a change in the fixed costs. Thus

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[1] "The Variation of Costs with Volume," Research Series No. 16, *N.A.C.A. Bulletin,* Vol. XXX, No. 20, Section 3, p. 1221.

greater mechanization of operations, even without increased output, generally results in a larger proportion of fixed costs and a lower proportion of variable costs.

Special Problems of Fixed Burden Costs. The budgeting and control of fixed burden costs present certain problems not encountered with variable costs. These may be summarized as follows:

1. Fixed costs are the result of commitments practically all of which extend beyond the budget period; hence, an allocation of these costs must be made as between periods.
2. Decision must be made as to what portion of the fixed cost, allocated to a particular period, is to be absorbed by the production of that period.
3. The responsibility for fixed costs is usually with general or major production executives, whereas the responsibility for variable costs usually falls upon minor production executives.
4. Rigid control can be exercised over the fixed expenditures, whereas the variable expenditures must be flexible.

Allocation of Fixed Costs to Fiscal Years. When a fixed cost commitment is made which extends over several fiscal years, some method must be adopted for distributing the cost to the individual years and to the individual units of product manufactured and sold during the cost commitment period. When management makes a fixed cost commitment, it presumably has in mind some program of production and sales which justifies the commitment. Proper accounting will attempt to reveal the success or failure of the program in such a manner that past and current results will serve as a guide to contemplated future action. This is one of the difficult problems in accounting and it is one to which budgeting can lend assistance. The problem is complicated by the fact that an attempt must be made to prepare annual operating statements for both management and investors which currently resolve the ultimate operating results of the business into exact annual installments. In other words, it is necessary to ascertain at the end of the current fiscal year what part of the ultimate profit or loss belongs to the current year. Obviously, it is difficult correctly to ascertain the part before the whole is known and, where there is a large element of long-term fixed cost, the ultimate profit or loss cannot be known accurately at the end of each year. Accountants are well aware of this elementary fact; however, investors, and even management, sometimes fail to recognize this difficulty. If the profit or loss of a particular year is to be intelligently estimated, it is necessary first to make an intelligent estimate of the profit and loss factors for the longer term of which the year is a part. This is a joint problem of accounting and management and it is in this connection that the budget makes its contribution.

To illustrate this problem, it may be assumed that a company purchases a special machine at a cost of $10,000 which it expects to use during a period of five years. The cost of maintaining the machine will add an additional $10,000 to the fixed cost commitment for the five years. It is expected that 5,000 units of product will be manufactured on the machine and sold during the five-year period at a fixed cost of $4.00 each. It is unlikely, however, that the production and sales will be distributed evenly throughout the five-year period. Assuming, for the sake of simplicity, that there are no variable costs and that the product is to sell for $4.50 a unit, the plans for the five-year period may be expressed as follows:

Total units to be produced and sold	5,000
Sales (5,000 units at $4.50)	$22,500
Cost (5,000 units at $4.00)	20,000
Profit	$ 2,500

Since the cost commitment of $20,000 is based upon a production and sales expectancy of 5,000 units, a basis is provided for distributing the cost to production, and thereby to fiscal years. The cost should be applied at the rate of $4.00 per unit and this plan should be followed so long as the general expectancy remains the same.

It is seldom possible to predetermine accurately the production and sales for a long period. The ultimate results may be 4,000 units or 6,000 units instead of the 5,000 planned. This, however, is the point about which management should be advised. What is the success or failure of plans relative to fixed cost commitments? The effect of such variance of actual results from original plans should be isolated and explained as a guide to future action.

To extend the illustration, assume that 1,000 units are budgeted for the first year and that only 800 units are made and sold during the year. The results would then be:

Sales (800 at $4.50)	$3,600
Cost (800 at $4.00)	3,200
Profit from operations	$ 400
Less loss resulting from failure to utilize facilities as planned	800
Net loss	$ (400)

Here management expected a profit of $500 and finds a loss of $400. The reasons for the $900 difference are, however, definite. They are:

Long-term cost commitments in excess of those justified by volume obtainable	$800
Loss of profit resulting from failure of actual volume to reach expected volume	100
Total	$900

Had the actual volume for the year been 1,200 units, the results would have been:

Sales (1,200 at $4.50)	$5,400
Cost (1,200 at $4.00)	4,800
Net profit	$ 600

Since volume exceeded expectations, conservative practice would dictate that the full fixed cost be absorbed, at least for purposes of internal analysis. For external statement purposes, accepted practice may require that the $800 of overabsorbed fixed cost be added to the profit.

The foregoing illustration may suggest the question as to the method of procedure when it is apparent that the fixed cost cannot be recovered and that management's long-term estimate is wide of the mark. When such conditions have an important bearing on current operations and product costs, the long-term estimates should be revised and the consequent loss immediately charged to management's error. The same policy might apply to important gains except that these will seldom reach the same extremes as losses and there is the basic objection of reflecting unrealized gains. While this should never be done for external reporting purposes, it may, in very extreme cases, be done for internal management purposes.

To illustrate, assume in the above case that $4,000 of the fixed cost has been absorbed during the first year in accordance with management's long-term estimate. It now develops that the demand for the product is suddenly reduced as the result of new inventions. Were the company free to make new long-term commitments of fixed charges for the remaining period, it would be justified in creating an annual charge of only $2,000 a year, or one-half the present amount. Here management has made an error which should in no way be confused with current production operations. The loss of $8,000 (one-half of the remaining fixed cost of $16,000) should be recognized and charged as a management error. A new basis of fixed charges should be established for the control of operating efficiency and for the determination of product costs and prices. Whether the loss of $8,000 should be recognized in one year or spread over the remaining years in which the charges occur depends upon the nature of the charges and the desire of management to follow a conservative course. The choice is of little consequence for internal control purposes.

As the long-term production and sales outlook is reviewed from time to time, management should pass upon the question as to whether or not the current fixed cost commitments are justified by reasonable estimates of future demands. Each individual fixed cost item should be so examined. Where such fixed cost commitments exceed by an important degree the amounts which would be established were the concern free to make new commitments, the excessive costs should be charged to management's error and eliminated from current production costs. Charges against operating executives would then include, for a particular year, only those costs which are justified by a reasonable estimate of future requirements.

The actual case is by no means as simple as the one illustrated. Many different commitments are made at different times and for periods of varying length. Moreover, particular cost commitments relate to numerous products and sales projects. Nevertheless, the fact remains that any attempt to ascertain current operating results and to interpret these results in relation to cause and effect requires a long-term program of fixed costs and sales expectancy.

Possibility and Practicability of Long-Term Estimates. Management does not, or at least should not, make long-term commitments in burden charges without estimating the volume of goods to be made and sold as a means of recovering the charges. If such long-term estimates of volume are necessary as a basis for decision as to the original commitments, they must be available as a basis for distributing the charges to the years in which it is estimated the volume will be secured. The budget should serve as an aid in estimating the volume to be secured and the commitments justified by such volume expectancy. It should further serve as an aid to the enforcement of the program adopted, and should reveal the extent of its realization.

Since many concerns produce a large variety of products the volume of which cannot be expressed in a common unit such as tons, dozens, etc., it is frequently necessary to express volume in terms of direct labor hours or percentage of capacity. For example, a plant may be committed to fixed charges of $1,000,000 a year for the next five years. This it estimates is justified by an average volume expectancy of 70% capacity. If now the operations of the current year are 80%, it should absorb $1,142,856 of the fixed charges of $5,000,000 or 80/350ths (5 × 70%) of $5,000,000. If current volume represents 60% of capacity, the absorption of fixed costs should be 60/350ths of $5,000,000, or $857,143.

The plan should be applied to individual divisions or departments; thus, in a particular year, Department A, operating at 80% capacity, should absorb 80/350th of its five-year charges; while Department B, operating at 60%, would absorb 60/350ths. The period of commitment will also vary as between different divisions and different elements of fixed burden.

In most concerns the plan can be applied with comparatively little practical difficulty. In fact, such a plan is usually followed in the distribution of the charges to operating periods within the year.

Normal Activity. Tied into the matter of long-range estimates is the level of activity selected in setting standard costs. It will affect the amount of variance shown monthly in the financial statement, either forecast or actual, and will, of course, have an important bearing on the product standard cost. Management should clearly understand the significance of the level selected.

Generally speaking, there are three levels on which fixed standard or budgeted manufacturing overhead may be set:

1. Expected sales volume for the year, or other period, when the standards or budgets are to be applied.
2. Practical plant capacity, representing the volume at which a plant could produce if there were no lack of orders.
3. The normal or average sales volume, here defined as normal capacity.

A few comments may be made as to each of these three levels. If expected sales volume is used, all costs are adjusted from year to year. Consequently certain cost comparisons are difficult to make. Furthermore, the resulting statements fail to give management what may be considered the most useful information as to volume costs. Standard costs would be higher in low-volume years, when lower prices might be needed to get more business, and lower in high-volume years, when the increased demand presumably would tend toward higher prices. Also the estimate of sales used as a basis would not be too accurate in many cases.

Practical plant capacity as a basis tends to give the lowest cost. This can be misleading because sales volume will not average this level. Generally there will always be large unfavorable variances, the unabsorbed expense.

Normal sales volume or activity has been defined as the utilization of the plant that is necessary to meet the average sales demand over the period of a business cycle, or at least long enough to level out cyclical and seasonal influences. This base permits a certain stabilization of costs and the recognition of long-term trends in sales. Each basis has its advantages and disadvantages, but normal capacity would seem to be the most desirable under ordinary circumstances.

Under conditions where one product is manufactured, normal capacity can be stated in the quantity of this unit. In those instances where several products are made, it is usually necessary to select a common unit for the denominator. Productive hours are a practical measure. If the normal productive hours for all departments or cost centers are known, the sum of these will represent the total for the plant. The total fixed costs divided by the productive hours at normal capacity results in the standard fixed cost per productive hour.

Idle Capacity Costs. The setting of a level of normal activity is closely related to the problem of idle plant costs. Situations will arise where fixed costs are charged to fiscal years on a straight-line basis, and where the actual plant capacity is substantially in excess of that needed. Under such circumstances it is still desirable that fixed overhead standards be calculated on the basis of normal activity, and that any remaining fixed overhead be charged directly to income and expense as the cost of idle capacity.

Responsibility for Fixed Costs. The responsibility for some fixed costs is with the general executives. Such costs include long-term commitments in plant and equipment, long-term leases, pension plans, patent amortization, salaries of major production executives, etc. Some of these are subject to periodic revision, others are definitely fixed for considerable periods in advance. The responsibility for other fixed costs must be placed with the major production executives. These include such items as the salaries of minor production executives, fixed clerical salaries, etc. These are usually subject to revision at any time and are fixed only in the sense that they are expected to remain at definite levels during the budget period.

The fixed costs should be classified as to responsibility and each group should be budgeted separately. It is then possible to definitely place the responsibility for excessive fixed costs.

To the extent that cost commitments are fixed and irrevocable, the procedure of budgeting consists of:

1. Determining what the costs will be.
2. Developing a plan for the distribution of these costs to fiscal years.
3. Developing a plan for apportioning the costs of the fiscal years as between production and idle capacity.
4. Presenting a comparison of the actual costs with those budgeted and the actual distribution with the distribution as planned.
5. Analyzing the effect of excessive fixed costs on profit results.

The fixed costs which are subject to periodic revision must be further analyzed as to their standard relationship to production volume. Variances from standard must be analyzed as to cause and responsibility.

Illustrations and Special Applications

Complications in the Budget of Manufacturing Expenses. The nature and diversity of the manufacturing expenses ordinarily encountered in business are such that many problems arise which merit special investigation as to control methods. It is beyond the scope of this book to discuss all of these. However, a brief review of some special applications and case studies might prove beneficial.

Maintenance Expense—The Problem. Repair and maintenance expenses represent sizeable expenditures in most companies. The cost may aggregate 5 or 10% of net sales in some industries; so that savings in this area can be quite significant. Though repair and maintenance expense is typically quite high in most companies, so also it is typically *not* under adequate control. The phrase "adequate control" does not imply a rather low cost level for a particular period: Too little maintenance could prove worse than too much. Experience has demonstrated that too tight a control over these expenses can be expensive over the longer term, by reason of interrupted production, higher accident rates, scrap increases, lost machine time, lost man-hours, and probably lost customers.

Several conditions complicate the task of controlling maintenance expense:

1. Responsibility is divided on many phases—between the production and maintenance staff.
2. Breakdowns and accidents may be quite irregular.
3. It is difficult to judge whether or not costs are excessive because an acceptable level of expense will vary with the age of equipment, past maintenance practice, operating conditions, etc.
4. Major repair jobs must be undertaken at regular intervals, with a resulting fluctuation in total expenditure for maintenance.
5. From the individual work-order viewpoint, many jobs are difficult to estimate as to expected cost or man-hours required.

These are a few—but only a few—of the problems confronting those concerned with control of maintenance expense.

An Approach to Maintenance Cost Control. The objective in maintenance cost control is the securing of the lowest possible expenditure over a relatively long period, consistent with the efficient operation of the plant. It may be taken for granted that the responsibility for proper maintenance and reasonable costs will continue as a joint responsibility of the production group and the maintenance department. The foreman may abuse the equipment, or the maintenance crew may do a poor repair job. The machinery may be improperly installed or operated; or the sales requirements may interfere with proper inspections and care. Yes, there are a host of reasons as to why excess maintenance can occur, and why it is difficult to clearly place responsibility. It appears that the most effective answer lies in close teamwork between production and maintenance.

However, despite the problems, these steps are suggestive of possible approaches:

1. Classify all maintenance costs, both past and future, into two broad groups:
   a) Routine and clearly repetitive items.
   b) Major repair projects.

   Examples of the former are the usual oiling, greasing, and preventive maintenance on equipment. Major repair projects would include such undertakings as the rebuilding of furnace walls, revamping of crane runways, replacement of roof, reconditioning of ventilating systems, or the resurfacing of parking lots.
2. Establishment of separate budgets for each of the two major classifications:
   a) For the routine, on the basis of the determination of variable and fixed costs, as discussed in the preceding chapter. Past experience and engineering estimates of what maintenance should be necessary are guides.
   b) For the major projects, estimates on an individual project basis of what is needed and at what cost. The survey should cover an extended span of time—perhaps five years—so that all costs are considered.

      These costs ought to be included in the product standard costs; and satisfactory methods should be selected for allocating the costs to periods in a manner similar to other fixed costs. Perhaps a reserve basis might be found desirable. (Reports on actual expenditures can be made regardless of the accounting treatment.)
3. For the major projects, annually or at other periodic intervals, review the properties and projects to determine (*a*) that the estimated

cost is reasonable, (*b*) that all major items have been considered, and (*c*) that the tentative schedule for maintenance is satisfactory.
4. Establish a timetable for each of the projects, and prepare an annual budget for those to be started during the fiscal period. Such budget would be subject to the regular approvals.
5. Secure estimates for each job, if practical, and whether major or routine. Compare actual and estimates.
6. Test the maintenance expense by such supplementary methods as the following:
   - *a*) In relationship to the cost of the assets—perhaps 5% per annum is a fair standard.
   - *b*) The ratio of maintenance crew size to production workers.
   - *c*) In relationship to industry experience.

While these suggestions do not assure control of maintenance costs, they appear to be a step in the right direction.

Maintenance Expense Reports. Maintenance expense control will be assisted by a proper compilation of information. However, any data which are gathered should be expressed to the extent practical in the terminology and in a manner most suitable to the maintenance supervisors. Reports can summarize information to bring out significant trends and relationships. For example, maintenance and repair cost by individual piece of equipment, or by type of maintenance required might be useful. Tabulating applications can be helpful. Informative summaries by type of maintenance cost might astound some of the staff—the monthly cost of replacing light bulbs, oiling equipment, for example.

Comparisons of actual and estimated expense by work order often are made, as in Figure 36. Budget reports on total maintenance department expense could be similar to Figure 34.

Indirect Labor. Another significant and expensive element of manufacturing expense is indirect labor. It may range anywhere from 15% to 80% of the direct labor cost of many a business. The analysis necessary for effective budgeting and control is illustrative of an approach to a typical problem. The accountant can make a valuable contribution to a business through taking a part in the planning. His job is not merely to record the happenings and report thereon.

A sound approach to establishing a budget for indirect labor is through the cooperation of those functionaries directly concerned: (1) the plant supervisor, (2) the industrial engineer, and (3) the cost accountant or budget analyst. The various steps in arriving at the in-

THE ILLUSTRATIVE COMPANY
COMPARISON OF ACTUAL AND ESTIMATED MAINTENANCE EXPENSE BY REPAIR ORDER—OVER ESTIMATE ONLY

Month of June, 1954

Classification by Amount of Excess Cost	Repair Order No.	Description	Estimated Cost	Actual Cost	Actual Over Estimate
$5,000 and over					
	1012	Replace "B" mill ...	$12,900	$ 18,600	$ 5,700
	1016	Repair boiler-plant A...............	20,000	25,890	5,890
	1019	Repair resin kettle.	13,300	19,600	6,300
Subtotal			$46,200	$ 64,090	$17,890
$1,000–$5,000					
	1066	Replace power line .	$ 2,400	$ 3.790	$ 1,390
	1067	Repair concrete runway	3,800	5,200	1,400
	1068	Paint locker room .	4,000	5,010	1,010
	1069	Repair atomizer—C .	3,100	4,840	1,740
	1232	Clean sewer line—A	4,500	6,360	1,860
	1233	Repair thinning kettle	2,200	3,210	1,010
	1234	Replace ventilator—A	2,700	3,740	1,040
Subtotal			$22,700	$ 32,150	$ 9,450
Under $1,000					
	1020	Paint men's restroom	$ 1,200	$ 1,320	$ 120
	1021	Move office furniture 120	600	615	15
	1022	Extend "R" ramp ..	1,900	2,760	860
	1049	Repair desk—110 ..	75	85	10
	1056	Clean scrub	750	1,220	470
Subtotal			$ 4,525	$ 6,000	$ 1,475
Total—Over Budget			$73,425	$102,240	$28,815

FIGURE 36. Comparison of Actual and Estimated Maintenance Expense, by Repair Order

direct labor budget for a particular department or plant are outlined below:

1. Select the activity levels on which data are to be secured. These should be levels at which the plant or department might reasonably be expected to work.
2. Determine the man-day requirements at each level. This is usually an engineering task.

   Details should be available as to:
   - *a*) The various functions involved.
   - *b*) The method and extent of interchange of manpower.

BUDGETS AND STANDARDS TECHNICAL DATA

Account Name Indirect Labor
Account No. 5101
Length of Period Month
Normal Work Week: Shifts per Day 1
Hours per Shift 8
Days per Week 5
Operating Range 66%–100%

Plant Navarre Street
Dept. Tooling
Year 1955
Activity Base Standard Direct Labor Hours
Activity Units at Capacity 4,644

Job Code	Description	Requirements at Activity Level 66%	Requirements at Activity Level 80%	Requirements at Activity Level 100%	Rate	Data at 100% Level Fixed	Data at 100% Level Variable	Variable Rate per M Units
	TECHNICAL DATA (men per shift)	Men	Men	Men		Men	Men	
110	Clean-up	½	½	½		½		
111	Trucking	2	2½	3			3	
112	Testing	1	1	1½			1½	
113	Preparation	½	½	1		½	½	
114	Inspection	2	2½	3			3	
	Total	6	7	9		1	8	

ACCOUNTING DATA

		Hours				Man-Hours	Amount	Man-Hours	Amount	Hours	Amount
110	Clean-up	86	86	86	$1.00	86	$ 86	–	$ –	–	$ –
111	Trucking	344	430	516	1.25	–	–	516	645	111 1	138 89
112	Testing	172	172	258	1.50	–	–	258	387	55.6	83.33
113	Preparation	86	86	172	1.00	86	86	86	86	18.5	18 52
114	Inspection	344	430	516	1.50	–	–	516	774	111.1	166.67
85	Union Meeting	10	10	10	1.00	10	10	–	–	–	–
86	Phy. Inventory	10	12	14	1.00	10	10	4	4	.9	.86
89	Experimental	8	8	8	1.25	–	–	8	10	1.7	2.15
90	Training	10	10	10	.90	10	9	–	–	–	–
	Total	1,070	1,244	1,590		202	$201	1,388	$1,906	298.9	$410.42

Supplementary Data and Comments:

1. Calculation of direct labor hours at capacity:

$$\left.\begin{array}{l} a = 27 \text{ men per shift} \\ b = \ \ 8 \text{ hours per shift} \\ c = \ \ 5 \text{ days per week} \\ d = 4.3 \text{ weeks per month} \end{array}\right\} a \times b \times c \times d = 27 \times 8 \times 5 \times 4.3 = 4{,}644 \text{ hours.}$$

2. At a 100% operation, one tester will spend one-half of time on clean-up.
   At the 66% operation, preparation man will spend alternate days on clean-up.
3. Time for 80-90 codes will be offset by overtime, if needed.

FIGURE 37. Budget and Standard Technical Data—Indirect Labor

3. Select the activity measurement base, or the factor of variability. For indirect labor, the standard direct labor hours have been found a suitable base.
4. Convert man-days to man-hours.
5. Calculate the fixed and variable components.
6. Translate the data into cost.
7. Calculate the variable rate.

An illustrative data sheet is presented in Figure 37. It is to be noted that this record is complete in that it reveals in detail how labor is to be utilized, or any other important phases of the determination. The segregation of fixed and variable elements was done by discussion with engineers, and represents stand-by labor only.

Another approach, less analytical than the preceding survey, is the plotting of past experience. Assume the past yearly record to show the following:

Reference	Month	Direct Labor Hours	Indirect Labor
1	January	11,000	$3,650
2	February	13,700	4,050
3	March	15,600	4,450
4	April	17,300	4,550
5	May	17,900	4,750
6	June	17,600	4,650
7	July	13,400	4,000
8	August	17,300	4,600
9	September	14,600	4,300
10	October	12,900	3,950
11	November	10,300	3,550
12	December	9,800	3,500

This would then be plotted (assuming no rate adjustments) as in Figure 38. The fixed expense as determined by inspection is approximately $2,000 per month, and the variable rate per direct labor hour is calculated to be $.15. [At the 12,000 hour level—($3,800 — $2,000) ÷ 12,000 = $.15.] If management were of the opinion that the cost was approximately 10% too high in the variable category, then the reduced budget level would be as illustrated by the dotted line, with the variable rate at $.135 per direct labor hour.

Service Department Costs. A problem constantly faced by those responsible for cost control assistance relates to the method of allocating service department costs. From both the cost control viewpoint and the cost determination viewpoint, it is essential that the distribution be a fair measure of the benefits received or services rendered.

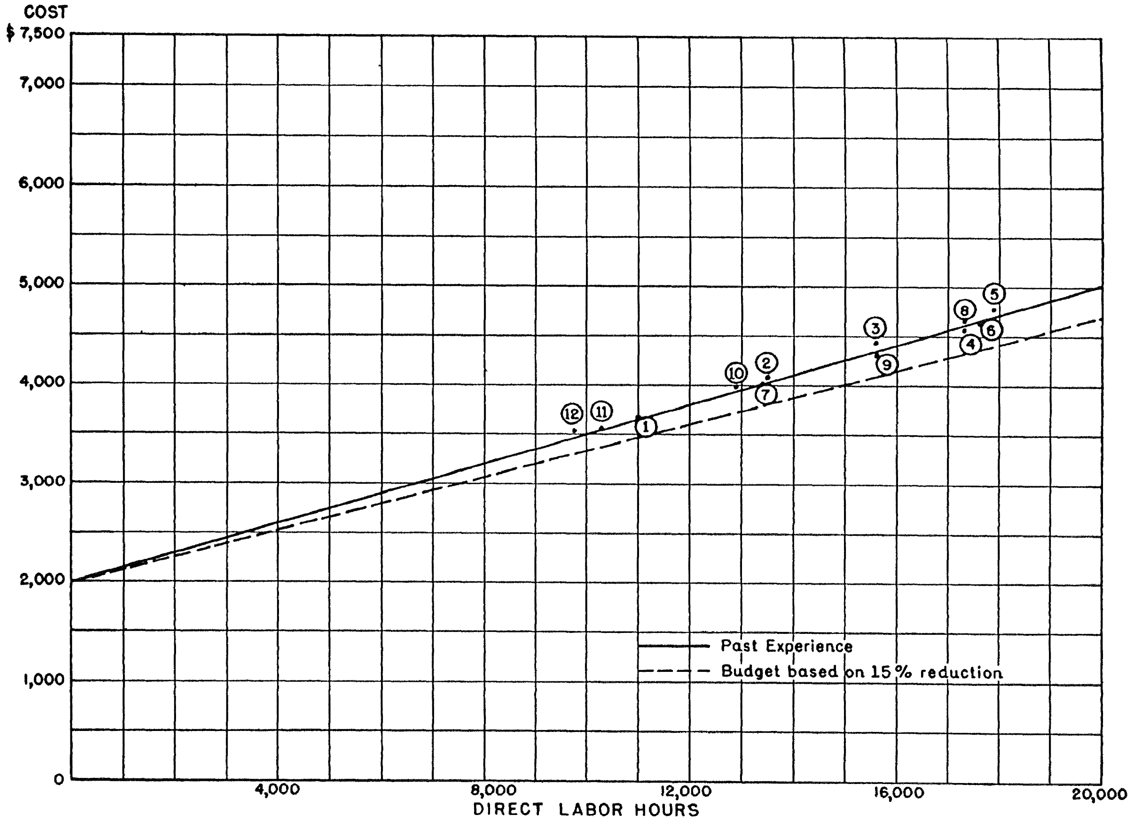

FIGURE 38. Graphic Determination of Indirect Labor Expense

For many indirect or service departments there is a logical method for distributing expenses, whereas an arbitrary basis must be used for others. As examples, power costs may be distributed in proportion to kilowatt hours consumed; maintenance costs may be allocated on the basis of actual man-hours used; building costs can be prorated on a square or cubic footage basis; quality control costs may be distributed on a unit of production base. On the other hand, the expense of planning and scheduling or general factory supervision, may be arbitrarily distributed on a man-hours, payroll dollars, or total processing cost basis in the absence of a better procedure.

From the practical viewpoint it is preferable to employ as simple a method as possible, even though not theoretically correct. Yet, when large sums are involved, it is perhaps desirable to consider the nature of the indirect expenses as related to plant activity. In those instances where some costs are fixed and others variable, it may be well to allocate these two types of costs on different bases: the fixed may be distributed on a standard or normal activity basis while the variable element can be allocated in proportion to actual activity. Powerhouse costs are a typical example. Since the plant is presumably built to handle normal capacity, the fixed costs of depreciation, taxes, insurance, and supervision could be allocated in proportion to steam consumption at normal capacity. The more variable expenses, such as fuel, hourly labor, and repairs, may be distributed on the basis of pounds of steam used each month.

It was stated earlier that the method of allocating service department costs has a direct bearing on cost control. This is related to whether actual or standard costs are distributed to departments using the service. From a cost control viewpoint, the service department supervisor should be held responsible for any costs over his budget. The department using the services should be charged at a *standard rate* for the actual services used, differentiating between the fixed and variable costs, of course. In this manner the using department can be held fully responsible for excess service costs in that department since no share of the inefficiencies or wastes of the service department are charged against the productive department. From the cost control viewpoint, the service supervisor is responsible for efficiently operating his department at whatever level of service required by the using departments, and as measured by the flexible budget applied to the level of activity. The productive departmental supervisors, on the other hand, are responsible for the quantity of service consumed.

In cost determination, it will be necessary to allocate the variances created in the service departments, usually in proportion to the standard costs already distributed. While this may be done for top-management purposes, these variances should not be reflected in the reports sent to the department manager for control purposes.

A Case Study on Budgeting. The budget procedure of the Minute Maid Corporation, together with necessary background data, is described in the following excerpt:[2]

> Minute Maid Corporation, organized in 1945, produces citrus-fruit concentrates at three "factories" located in central Florida. As a pioneer in the concentrate industry, the corporation had to develop a national market for its products.
>
> A subsidiary owns groves in Florida which yield only fifteen per cent of the fruit requirements. The balance has been purchased from independent growers at current prices during the picking season. In an effort to stabilize the cost of oranges and to strengthen its sources of supply, Minute Maid has adopted a "Grower Participation Plan," under which participating growers share in Minute Maid's net profit on a formula basis.
>
> The best pick begins around New Year's, but processing may start in December and continue until June and possibly into July. During the rest of the year, work at the three factories is confined to maintenance.
>
> The factories deliver the packed concentrates to the corporation's primary warehouse in Florida, which forwards them to public warehouses in six marketing divisions, the quantities being determined by immediate market demand. From there, the concentrates go to distributors upon receipt of their orders. The corporation assists the distributors in selling the concentrates through local advertising, and by promotional programs, which have included the installation of Minute Maid cabinets and dispensers at retail outlets.
>
> As with most new industries, the concentrate industry has faced a period of unsettled conditions. While the long-term trend has been upward—and during the early years it was sharply upward beyond all expectations—short-term forecasts have been hazardous because of uncertain but rising costs of fruit and a market which reacts sharply to penny changes in price.
>
> Though faced with an unsettled situation in a new industry during its early years, Minute Maid adopted a budget as the best available guide in facing knotty interrelated problems of:
>
> Cost and price.
> Squeezed margins of profit.
> Sales effort and forecast.
> Amount and timing of production.
> Justified capital expenditures.
>
> The early budgets were largely guesswork, and proved to be wide of the mark. However, the management believes that conditions in the industry eventually will stabilize, and that, with continued experience, forecasts will come closer and closer to performance and provide reliable figures upon which to base

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[2] From "Budgeting Expenses in Small Companies," *Studies in Business Policy*, No. 58, National Industrial Conference Board, Inc., pp. 35-36.

policy, decision, and action. With these expectations, the management has adopted budgeting which includes:

- Sales forecast
  - Concentrates
  - By-products

- Factory Costs
  - Direct for each factory and department
  - Indirect for each factory and department
  - Factory general by departments
    - Total
- Fruit and tinplate
- Storage and movement
- Sales expense and advertising
- General, administrative, and other
- Summary of expenses
- Cash flow

Budgeting Methods and Procedures. The fiscal year begins November 1, when inventory is lowest and just before the factories resume processing of a new citrus crop. The budget for the coming year is prepared at the close of each fiscal year. The figures have been for the fiscal year as a whole without a monthly breakdown, due to the erratic behavior of short-term sales and costs. However, as operating conditions settle down into patterns, efforts will be made to apportion budget figures among the months in the fiscal year.

Budgets are prepared under the close direction of an executive committee composed of the president, vice president and treasurer, and several members of the board of directors. The committee and the vice president for sales first direct their attention to a tentative sales forecast prepared by the general sales manager on the basis of reports from the six marketing-division managers.

Each sales division and territory has its own special problems which call for individual consideration. Will a stronger distributorship increase sales in this territory? Will additional cabinets and dispensers increase sales in that territory, and by how much? Will advertising placed here produce better results than advertising placed there? What will be the comparative results of the various possible courses?

With the penny-wise market, sound answers to such questions often seem elusive. Since sales volume varies inversely and often sharply with price, a price increase is not a simple solution to a rise in cost which has compressed a small margin of profit. Should the corporation raise the price of its concentrates, and be content with a smaller share of the market? Or should its position in the industry be maintained with production sold at prices which may result in an operating loss? With the outlook for an expanded market, should the corporation enlarge its capital equipment? If so, by how much? What returns can be expected?

The executive committee discusses such questions and then decides upon business courses, costs, and programs such as the Grower Participation Plan.

The committee and the vice president for sales then come to an agreement on a final sales forecast which includes the expected results.

Factory Costs. The vice president for operations translates the final sales estimates into production requirements, which he allots among the three factories. Each factory manager estimates his "operating" costs on the basis of his assigned production. These costs include:

Labor and supervision.
Operating supplies.
Maintenance.
Outside repairs.
Fuel oil.
Electric power.

The factory managers submit their separate estimates on those items to the controller, who accepts them as submitted and, in close collaboration with foremen and supervisors, estimates these other expenses for each factory:

Travel and expense.
Group insurance.
Employee welfare.
Depreciation.
Rental of equipment.
Royalties on machines.
Insurance.
Taxes.
Transportation.

And these "factory general" expenses, which are apportioned among the three factories after total estimates have been finalized:

Fruit procurement (salaries, etc.).
Engineering.
Quality control.
Central office (for production).
Research and development.

Most of the factory costs estimated by the controller are readily computed when operating commitments become known. With his and the factory managers' estimates, the controller completes his "Summary of Factory Overhead Budget,[3] Fiscal Year Ending October 31, 19__." (Figure 39.)

From this summary the controller calculates factory rates per gallon for use in pricing the corporation's products. These rates may disclose to the executive committee, which reviews the "Summary," a further need to re-examine estimated costs at competitive price levels.

The first processing of the citrus fruit yields a material suitable for by-products, such as cattle feed, citrus meal, and citrus molasses. At one plant this material is sold to a contractor. But at the other two plants it is processed into

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[3] This "overhead" includes both direct and indirect costs.

Summary of Factory Overhead Budget, Fiscal Year Ending October 31, 19—

	CONCENTRATE				BY-PRODUCTS				
	Plant A	Plant B	Plant C	Total	Plant A	Plant B	Total	General	Grand Total
Direct									
Fruit taxes	. .	. .	. .	. .	. .	. .	. .	. .	. .
Royalties	. .	. .	. .	. .	. .	. .	. .	. .	. .
Fuel oil	. .	. .	. .	. .	. .	. .	. .	. .	. .
Total direct	. .	. .	. .	. .	. .	. .	. .	. .	. .
Indirect									
Labor and supervision	. .	. .	. .	. .	. .	. .	. .	. .	. .
Operating supplies	. .	. .	. .	. .	. .	. .	. .	. .	. .
Maintenance supplies	. .	. .	. .	. .	. .	. .	. .	. .	. .
Outside repairs	. .	. .	. .	. .	. .	. .	. .	. .	. .
Travel and expense	. .	. .	. .	. .	. .	. .	. .	. .	. .
Group insurance	. .	. .	. .	. .	. .	. .	. .	. .	. .
Social Security taxes	. .	. .	. .	. .	. .	. .	. .	. .	. .
Employee welfare	. .	. .	. .	. .	. .	. .	. .	. .	. .
Depreciation	. .	. .	. .	. .	. .	. .	. .	. .	. .
Rental of equipment	. .	. .	. .	. .	. .	. .	. .	. .	. .
Insurance	. .	. .	. .	. .	. .	. .	. .	. .	. .
Taxes	. .	. .	. .	. .	. .	. .	. .	. .	. .
Electric power	. .	. .	. .	. .	. .	. .	. .	. .	. .
Transportation	. .	. .	. .	. .	. .	. .	. .	. .	. .
Subtotal indirect	. .		. .	. .	. .	. .	. .	. .	. .
Factory general:		. .							
Fruit procurement	. .	. .	. .	. .	. .	. .	. .	. .	. .
Engineering	. .	. .	. .	. .	. .	. .	. .	. .	. .
Quality control	. .	. .	. .	. .	. .	. .	. .	. .	. .
Central office	. .	. .	. .	. .	. .	. .	. .	. .	. .
Total indirect	. .	. .	. .	. .	. .	. .	. .	. .	. .
Total manufacturing overhead	. .	. .	. .	. .	. .	. .	. .	. .	. .
Estimated gallons production	. .	. .	. .	. .	. .	. .	. .	. .	. .
Absorption rate per gallon	. .	. .	. .	. .	. .	.	. .	. .	. .

FIGURE 39. Illustrative Factory Overhead Budget

by-products, and the costs of this secondary processing also are budgeted for the fiscal year.

The costs of fruit and tinplate do not appear in the factory budgets. The controller estimates them separately at: quantities needed for scheduled production multiplied by an average price per unit during the processing season. The controller estimates the average price per unit, after an analysis of the industry factors, with the realization that the budget figures for these primary costs can be only rough approximations because of the fluid supply and cost situations. Through the contracts with growers under the Participation Plan, difficulties in estimating fruit costs may be reduced.

The cost of fruit supplied by the corporate-owned groves is based on advances for: (1) "Production costs" and (2) general, administrative, and other expenses—less income. The controller makes the estimates.

Another Example. The methods of separating expenses into their fixed and variable elements, and the use of dual overhead rates, is illustrated in this example. The simplified procedure includes both a service department and a production department, and describes budget establishment as well as budget application.

Establishing the Budget—Service Department. It will be assumed that a review of the machine shop (a service department) expenses and related records for the past year are as shown in Figure 40.

The immediate objective with respect to the service department is to:

1. Determine the fixed and variable elements of the expenses, using departmental man-hours as the activity base.
2. Calculate the variable rate of expense.
3. Determine the proper relationship between departmental man-hours and the plant machine hours—the latter having been selected as the activity base for the machine shop.

Looking first at the supervision expense, it can be seen there is some variability. Discussions with the plant superintendent indicate a base staff as follows:

1	Department Manager	$ 1,000
3	General foremen	2,100
18	Foremen and assistants	6,900
	Total	$10,000

The variable balance and applicable rate can be calculated as follows:

	Department Hours	Amount
Maximum	120,000	$12,000
Base (Minimum)	80,000	10,000
Variable	40,000	$ 2,000

The variable rate per hour for supervision expense is therefore \$.05 (\$2,000 ÷ 40,000). The fixed amount is equal to \$10,000 less \$.05 times the base hours, or \$10,000 — \$4,000 = \$6,000.[4]

Salaries—Other also reflects a limited variability. The fixed amount may be calculated to be \$1,000 [\$3,000 — (\$.025 × 80,000)], and the variable budget per man-hour to be \$.025 (\$1,000 ÷ 40,000).

Depreciation, by observation, is seen to be entirely fixed in nature.

For illustrative purposes, it will be assumed that the apparent greater variability of supplies expense makes it desirable to determine the segregation in fixed and variable components by the use of the familiar scatter chart. Fixed supply expense as thus determined is \$7,000; and the variable expense rate calculates to be \$.10 per hour (at the 110,000-hour level—\$18,000 minus fixed of \$7,000 leaves a balance of \$11,000, divided by 110,000 equals \$.10).

By computation, other expenses are determined to be: Fixed \$3,000; variable rate \$.025 per hour (\$6,000 — \$5,000 = \$1,000 ÷ 40,000 hrs. = \$.025).

It will be assumed that hourly labor is entirely variable, at a rate of \$2.00 per hour.

For the purpose of determining budget rates to allocate charges to production departments, the machine shop budget structure, and the budget at an assumed normal activity rate of 100,000 man-hours per month, may be summarized as follows:

	Budget Structure		Budget at Normal Activity Level		
Description	Fixed	Variable Rate per Dept. Man-Hour	Fixed	Variable	Total
Hourly Labor	\$ –	\$2.00	\$ –	\$200,000	\$200,000
Supervision	6,000	.05	6,000	5,000	11,000
Salaries—Other	1,000	.025	1,000	2,500	3,500
Depreciation	4,000	–	4,000	–	4,000
Supplies	7,000	.100	7,000	10,000	17,000
Other Expenses	3,000	.025	3,000	2,500	5,500
Total	\$21,000	\$2.200	\$21,000	\$220,000	\$241,000

The remaining problem as to the machine shop is the determination of a proper relationship between departmental man-hours and plant machine hours. By inspection, or in practice by scatter chart technique, it can be established that a 1 to 20 ratio is reasonable. For each twenty machine hours in the plant, the company should expect an expenditure of one man-hour in the machine shop.

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[4] See Chapter 5 for method of computation.

THE ILLUSTRATIVE COMPANY
MACHINE SHOP (SERVICE DEPARTMENT)
SUMMARY OF EXPENSES FOR ONE YEAR

Month	Plant Machine Hours (000's)	Department							
		Man-Hours	Hourly Labor	Super-vision	Salaries —Other	Depreci-ation	Supplies	Other Expenses	Total Expenses
January	1,600	80,000	$160,000	$10,000	$3,000	$4,000	$15,000	$5,000	$197,000
February	1,700	85,000	170,000	10,000	3,000	4,000	15,500	5,000	207,500
March	1,700	90,000	180,000	11,000	3,300	4,000	16,000	5,200	219,500
April	1,850	95,000	190,000	11,500	3,300	4,000	16,500	5,300	230,600
May	2,000	100,000	200,000	11,500	3,300	4,000	17,000	5,300	241,100
June	1,800	90,000	180,000	11,000	3,300	4,000	16,000	5,200	219,500
July	1,850	90,000	180,000	11,000	3,300	4,000	16,500	5,200	220,000
August	1,900	95,000	190,000	11,500	3,700	4,000	16,500	5,400	231,100
September	2,400	120,000	240,000	12,000	4,000	4,000	20,000	6,000	286,000
October	2,100	100,000	200,000	12,000	4,000	4,000	17,000	6,000	243,000
November	2,200	110,000	220,000	12,000	4,000	4,000	18,000	6,200	264,200
December	2,400	120,000	240,000	12,000	4,000	4,000	20,000	6,000	286,000

FIGURE 40. Summary of Actual Expenses and Hour Data—Service Department

ESTABLISHING THE BUDGET—PRODUCTION DEPARTMENT. For the milling department, a production department, the same procedure must be followed as was used in the service department, to segregate expenses into their fixed and variable elements, and to determine the variable rate per standard machine hour. The one added complication is the inclusion of the service department costs at a standard rate. These service department expenses should remain segregated by the fixed and variable elements. Without going through the details of construction, the basic data is assumed to show the results illustrated in Figure 41, with explanations. It is to be noted the total variable cost of each service department applicable to the production department is converted into the factor of variability—standard machine hours—of the production department.

APPLYING THE BUDGET—SERVICE DEPARTMENT. The next problem is one of determining the budget for a given period, assumed to be a month in this illustration; comparing actual and budgeted expenses; and taking corrective action. Assume the actual machine hours in the plant to have been 1,800,000. The allowable man-hours for the machine shop would then be 90,000(1,800,000 ÷ 20).

On such a basis, the budget for the department would be calculated as the variable rate per man-hour times 90,000, plus the fixed expense for each item of expense. Figure 42 indicates actual and budgeted results.

This service department was allowed base units as measured by plant productivity (standard machine hours). However, a good case could be presented for man-hour allowances based on the requirements of the productive departments. For example, out of the 2,000 excess man-hours, a total of 1,700 were required by reason of a breakdown. In this illustration, a more strict control is required, and all allowances are geared to the income producing factor.

The budget reports separate the allowances as between fixed and variable. In many cases, only the total need be shown. Also, fixed charges such as depreciation are included. If the entire expense is beyond the control of the department head, one practice is to omit it from the report. In this instance, it is included to reveal the total departmental expense.

Any corrective action as a result of this report would be initiated by the line organization; and the budget department would, at best, only make suggestions.

APPLYING THE BUDGET—PRODUCTION DEPARTMENT. In a manner similar to the service department procedure, a budget report would be prepared for the milling department, illustrated in Figure 43. It is

THE ILLUSTRATIVE COMPANY—MILLING DEPARTMENT
BUDGET STRUCTURE

		Budget Structure		Budget at Normal Activity Level		
Description	Basis of Allowance	Fixed	Variable Rate per Standard Machine Hour	Fixed	Variable	Total
Direct Charges						
Variable						
Supervision		$12,000	$.06	$12,000	$ 30,000	$ 42,000
Salaries—Other		2,000	.01	2,000	5,000	7,000
Payroll Taxes & Insurance		1,200	.006	1,200	3,000	4,200
Supplies		–	.08	–	40,000	40,000
Repairs and Maintenance		10,000	.04	10,000	20,000	30,000
Power		1,000	.02	1,000	10,000	11,000
Other		2,000	.01	2,000	5,000	7,000
Subtotal—Variable Expense		$28,200	$.226	$28,200	$113,000	$141,200
Fixed						
Depreciation		$25,000	$ –	$25,000	$ –	$ 25,000
Property Taxes		3,000	–	3,000	–	3,000
Insurance—Property		500	–	500	–	500
Subtotal—Fixed Expense		$28,500	$ –	$28,500	$ –	$ 28,500
Total Direct Charges		$56,700	$ 226	$56,700	$113,000	$169,700
Apportioned Charges						
Variable						
Machine Shop	25,000 man-hours of department require 25,000 × 2 20 or $55,000	$ –	$ 11	$ –	$ 55,000	$ 55,000
Quality Control	computed on basis similar to machine shop	–	.10	–	50,000	50,000
Testing	computed on basis similar to machine shop	–	.02	–	10,000	10,000
Boiler	based on normal level of steam requirements	–	.10	–	50,000	50,000
Subtotal—Variable Expense		$ –	$ 33	$ –	$165,000	$165,000
Fixed						
Machine Shop	Proportionate share, based on normal activity requirements	$ 5,250	$ –	$ 5,250	$ –	$ 5 250
Quality Control		3,000	–	3,000	–	3,000
Testing		1,000	–	1,000	–	1,000
Boiler		6,000	–	6,000	–	6,000
Subtotal—Fixed Expense		$15,250	$ –	$15,250	$ –	$ 15,250
Total Apportioned Charges		$15,250	$ 33	$15,250	$165,000	$180,250
Total Departmental Expense		$71,950	$ 556	$71,950	$278,000	$349,950

Notes: (1) Normal activity for the department is assumed to be 500,000 standard machine hours.
(2) It has been assumed that standard machine hours are a fair basis on which to allocate service department costs, and that all standard machine hours are of equal weighting.

FIGURE 41. Budget Structure, and Budget at Normal Activity—Production Department

THE ILLUSTRATIVE COMPANY
DEPARTMENTAL BUDGET REPORT

Department Machine Shop (67)
Dept. Head R. Jones

Month March, 195-
Base Units 90,000

	Month					Year to Date	
	Budget						
Account	Fixed	Variable	Total	Actual	Actual (Over) or Under Budget	Actual	Actual (Over) or Under Budget
Hourly Labor	$ -	$180,000	$180,000	$184,000	$(4,000) (*a*)	$546,900	$(7,500)
Supervision	6,000	4,500	10,500	10,610	(110) (*b*)	33,700	(210)
Salaries—Other	1,000	2,250	3,250	3,250	-	9,000	200
Depreciation	4,000	-	4,000	4,000	-	12,000	-
Supplies	7,000	9,000	16,000	15,900	100	47,200	710
Other Expense	3,000	2,250	5,250	5,310	(60)	13,700	(315)
Total	$21,000	$198,000	$219,000	$223,070	$(4,070)	$662,500	$(7,115)
Statistical Data:							
Man-hours			90,000	92,000	(2,000)	273,000	(3,610)
Cost per Man-hour	$ .23	$ 2.20	$ 2.43	$ 2.42	$ .01	$ 2.43	
% (Over)-Under Budget							

Notes: (*a*) Milling Department required an additional 1,700 man-hours by reason of No. 610 breakdown.
(*b*) Supervisory overtime.

FIGURE 42. Departmental Budget Report—Service Department

THE ILLUSTRATIVE COMPANY
DEPARTMENTAL BUDGET REPORT

Department Milling (109)
Dept. Head P. Ewe

Month March, 195–
Base Units 450,000 (Std. Machine Hours)

	MONTH					YEAR TO DATE	
	Budget						
Account	Fixed	Variable	Total	Actual	(Over) or Under	Actual	(Over) or Under
Direct Material	$ –	$100,000	$100,000	$105,000	$(5,000)(*a*)	$ 307,000	$ (5,800)
Direct Labor	$ 7,000	$225,000	$232,000	$231,000	$ 1,000	$ 697,000	$ (1,000)
Manufacturing Expenses:							
Direct							
Supervision	$12,000	$ 27,000	$ 39,000	$ 39,000	$ –	$ 115,000	$ 1,000
Salaries—Other	2,000	4,500	6,500	6,700	(200)	20,100	(700)
Payroll Taxes and Insurance	1,200	2,700	3,900	3,970	(70)	13,510	(250)
Supplies	–	36,000	36,000	38,400	(2,400)	114,200	(2,000)
Repairs and Maintenance	10,000	18,000	28,000	25,300	2,700(*b*)	78,600	560
Power	1,000	9,000	10,000	10,850	(850)	13,760	(750)
Other	2,000	4,500	6,500	6,400	100	19,000	270
Depreciation	25,000	–	25,000	25,000	–	75,000	–
Property Taxes	3,000	–	3,000	3,000	–	9,000	–
Insurance—Property	500	–	500	500	–	1,500	–
Total Direct	$56,700	$101,700	$158,400	$159,120	$(720)	$ 459,670	$ (1,870)
Allocated Services							
Machine Shop	$ 5,250	$ 49,500	$ 54,750	$ 58,490	$(3,740)(*c*)	$ 172,200	$ (4,120)
Quality Control	3,000	45,000	48,000	47,990	10	144,000	(110)
Testing	1,000	9,000	10,000	10,200	(200)	30,000	(1,600)
Boiler	6,000	45,000	51,000	51,860	(860)	153,860	(1,490)
Total Allocated	$15,250	$148,500	$163,750	$168,540	$(4,790)	$ 500,060	$ (7,320)
Total Manufacturing Expense	$71,950	$250,200	$322,150	$327,660	$(5,510)	$ 959,730	$ (9,190)
Total Departmental Cost	$78,950	$575,200	$654,150	$663,660	$(9,510)	$1,963,730	$(15,990)
Statistical Data:							
Machine Hours			450,000	448,000	2,000	1,349,500	700
Man-hours—Direct			112,500	112,000	500	345,000	(500)
% (Over)-Under Budget					(1.45)		(.8)

Notes: (*a*) 300 units of "X" material determined to be faulty. (*b*) Preventive Maintenance program is becoming effective.
(*c*) Represents 1,700 excess hours at standard rate of $2.20, resulting from No. 620 breakdown.

FIGURE 43. Departmental Budget Report—Production Department

to be noted that the service department charges are at the standard rate only for actual services required. For product cost determination in a statement of income and expense, for example, variances would be allocated on the basis of actual usage.

In preparing the financial forecasts, standard rates and fixed expenses would be used, with adjustments for expected overstandard costs.

Summary. It is impossible briefly to illustrate the intricacies of the typical burden distribution and control procedure. The foregoing illustrations are intended merely to convey some of the basic features of such procedure. These may be summarized as follows:

1. Variable and fixed burden costs should be separated throughout the distribution and control procedure and should be applied by separate burden rates.
2. Standards are the cornerstone of burden control procedure. They cannot be established in minute detail for all burden items but should be employed for major items and groups of items.
3. Cost comparisons should be available currently rather than at the close of extended periods. Space does not permit this to be shown in the foregoing illustrations.
4. Where dollar cost comparisons are not practicable, the control should be exercised in terms of unit consumption at the source. Such control is usually necessary with major burden items to supplement the dollar cost comparisons.
5. A department manager should not be penalized for fixed costs beyond his control. However, top management reports should clearly reflect variances arising by reason of insufficient volume.

Chapter 16

DISTRIBUTION COST BUDGET—GENERAL PROCEDURE

Distribution Costs Defined. In the broadest sense, distribution costs may be defined as the costs incident to all activities from the time the goods are produced until they are in the hands of the consumer—the cost to sell. Under such a concept, distribution costs would then include the applicable share of general administrative and financial expense. However, because budgets and other control techniques must be approached from the responsibility viewpoint, for this discussion the application shall be considered limited to those expenses usually under the jurisdiction of the chief sales executive. These include the following general classifications:

1. *Direct selling expense*—all the direct expense of salesmen, branch sales offices, sales supervision, and sales service—the expenses generally incident to solicitation of orders.
2. *Advertising and sales promotional expense*—all advertising expenditures; all expenses incident to sales promotion, market development, and publicity.
3. *Transportation expense*—all transportation charges on outbound goods to customers and on returned sales; and expenses of maintenance and operation of outward transportation facilities.
4. *Warehousing and storage*—all expenses of warehousing, storing, and handling of goods properly chargeable against distribution.
5. *General distribution expense*—all expenses of market research; expense of distribution accounting, if applicable; and all other expenses related to distribution functions under the control of the sales manager and not mentioned above.

In wholesaling and retailing concerns where the purchasing and selling functions are closely related and frequently performed by the same persons, the purchasing expense is often included with the distribution costs as a part of the total cost of doing business. Where this is the case, the purchasing expense should be budgeted along with the distribution costs.

Significance of Distribution Costs. The preceding several chapters have dealt with the costs of production. Yet it is sometimes forgotten that distribution costs are probably just as important as production costs in determining what price the consumer must pay for an article. As long as competition is a predominant element in the American economy, distribution costs will be important. And just this long, also, such costs can be a source of enormous waste unless adequately controlled. In operating a business, management must decide what products to sell, where to sell them, to whom to sell them, by what method to sell, and at what prices. Decisions on marketing or distribution problems, such as these, involve business planning—business budgeting. The economic consequences of alternative plans of action must be studied if the most promising course is to be selected. It would seem reasonable, then, to examine the use of budgets in the distribution function. There is every basis for believing that significant savings are to be made in this field of distribution costs through the application of control techniques just as economies in the factory have been realized through intelligent use of budgets and other devices.

Purpose of Distribution Cost Budget. The general advantages of budgeting, as mentioned in Chapter 2, are applicable to distribution activities. However, in more specific terms, the basic purposes in budgeting distribution costs are as follows:

1. To coordinate the distribution effort with the sales, production, and financial program.
2. To select the most profitable combination of distribution factors.
3. To direct sales effort intelligently.
4. To control the distribution costs.

To state the matter somewhat more directly, the problem is to decide how much it is necessary to spend, what type of expenditures to make, and when and where to make them in order to produce certain sales results; to see that such expenditures are made as planned; and, finally, to see that such expenditures produce satisfactory results.

Coordination of Distribution Cost and Sales Programs. The sales and distribution cost budgets are interrelated and interdependent. The objective is to secure that combination of elements of selling effort which will, in the long run, produce the most profit. Almost any sales volume can be secured if enough selling effort is used, but such effort is governed by the law of diminishing returns. Selling effort eventually reaches a point where the additional sales produced do not compensate for the additional effort. Conversely, the selling cost can be reduced to almost any point desired but with the ultimate effect that sales volume will be reduced so low that no profit will result.

Somewhere between such extremes must be found the proper amount of sales effort to be used. This principle applies not only to sales volume as a whole but also to individual classes of products, individual territories, and individual customer groups.

Neither the distribution cost nor the sales program can be developed independently of the other. Moreover, a coordination must be effected with the production and finance programs. The selling effort must be of a type designed to sell products which can be profitably produced, particularly those in which the concern holds a competitive advantage. Furthermore, the program of selling effort must not exceed that which can be safely financed.

Selecting a Combination of Distribution Factors. Were a concern to sell only one product, at one price, to one class of customers, through one channel of distribution, by one selling method, and in a restricted territory, the problem of planning the distribution cost would be comparatively simple and the point of diminishing returns could be established with reasonable certainty; but few, if any, such cases exist. Perhaps certain public utilities most nearly approximate such a situation. Usually, however, there are numerous products, varying prices, numerous classes of customers to whom sales can be made, several channels of distribution employed, various selling methods, a considerable choice of territories, and many other variations. What program of distribution effort will be most profitable in the face of these numerous possibilities?

One of the purposes of budgeting the distribution costs is to compel the sales executives to study the various possibilities early, while there is time for proper investigation and before the money is spent, and thereby to find the combination of distribution factors offering greatest promise of profit.

Directing the Distribution Effort. Generally speaking, the distribution effort should be directed in accordance with market possibilities. The realization of this objective is one of the most important purposes of budgeting distribution costs. Many concerns, upon analyzing the potentialities of their markets and their corresponding distribution effort, have found astonishing misalignment. By intelligent redistribution the profitableness of the effort has been greatly increased.

For example, if there are 1,000 potential buyers in Territory A and 2,000 in Territory B, it would seem logical, other conditions being the same, to direct twice as much effort to Territory B as to Territory A. It is the effort, not the cost, that should be apportioned. It is quite possible that the amount of effort per dollar of cost may vary in the two territories due to such factor as density of population. Many factors, other than number of buyers, must be considered. For example, buying power and intensity of competition may vary considerably in different territories. The point to be emphasized is that, the more intelligently the effort is distributed, the more profitable will be the results.

The intelligent direction of sales effort is aided in one other way through the use of budgets. When considering how funds are to be spent, the marketing executive must face the question of distribution effort to be expected, as well as the cost of such effort. He must answer such questions as: How many calls should a salesman make per week in a given territory? What should be the cost of a salesman's call? What should the per unit warehousing cost be? A well-conceived budget program may involve the establishment of distribution cost standards to assist in the direction of sales effort.

Controlling the Distribution Costs. The fourth purpose of budgeting distribution costs is that of control. To be sure, the budget process as applied to distribution is, first of all, a matter of coordinating such effort with the sales, production, and financial program; and of selecting the most profitable combination of distribution factors; and further of seeing that the sales effort is intelligently guided. Yet, the budget does offer, in addition, certain measures of control over certain distribution operations and costs.

In the control of production costs, the typical budget application consists of comparing actual and budgeted or standard costs, and the bringing of continued pressure on actual performance until it is in line with the budget. This can be done in the distribution cost area as regards the more repetitive or routine operations such as warehousing or order handling. By and large, however, a more positive approach is necessary and desirable so as to avoid the injurious curtailment of necessary services. The technique therefore tends to lie in the direction of getting more distribution effort and results for the same money. For example, emphasis might be placed on seeing that the budgeted number of calls are made; and that the budgeted sales per call are attained. These are instances where measures of individual performance are applied. More general indicators, such as per cent of selling expenses to sales, may be used as guides in increasing the sales level or in scrutinizing the level of selling expenses.

As will be seen, the method of applying the budget will vary with the circumstances. The advertising expenditures (discussed in Chapter 19) may, for illustration, be rigidly controlled against a fixed budget. Other expenses, such as order handling, may be permitted to vary with volume. The type of control to be applied to the various distribution costs depends on the circumstances; and the budget procedure must be flexible enough to deal with the situation. The budget can and should signal areas of weakness from the control viewpoint.[1]

Budgeting and Control of Distribution Costs—General Method. The development of adequate budgeting and control procedures for distribution costs is somewhat less than satisfactory in a great many companies. The usual method is to establish an annual budget based on past experience. This budget is typically fixed for the period in question, and sales management is considered to have done a good expense control job if the fixed budget is not exceeded.

It may be somewhat superfluous to state that such a practice is usually inadequate, often unsound, and may be generally inhibiting in its effect. It many times leads to long arguments about an unbudgeted trip, for example, which may have resulted in a sizable amount of new, profitable business. In essence, then, the need in many areas is for emphasis on sound relationships between expenditures and results achieved.

With this viewpoint in mind, some suggested basic steps in developing and making effective distribution cost budgets and control are outlined below:

1. Secure the necessary background information on the distribution activities of the company—the organization, the products, method of operation, peculiar problems, etc.
2. Determine what costs are significant from the control and budget standpoint, and make provision for a proper segregation of such items by type of cost, viz., traveling expenses, salaries, commissions, sample expense, etc.
3. Make provision for the proper segregation of costs *by responsibility.* The executive in charge of the particular activity segment can be held responsible only for those costs which he is in a position to control.
4. Determine, and make provision for, such subclassifications of cost as may be desirable in analytical reviews. For example, the sales organization may be established along product lines, and subdivided

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[1] For an illustration of the problems involved in developing a sales program, and the interdependence of sales and distribution costs, see J. Brooks Heckert and Robert B. Miner, *Distribution Costs* (2d ed.; New York: The Ronald Press Co., 1953), pp. 276-80.

by territory. Within each territory, certain expense elements may be direct as to particular products of the line. It may be desirable to provide for certain subclassifications, e.g., commissions or sample expense by product line.

5. Make the necessary cost and profit analyses as a guide in selecting the most profitable combinations of distribution activity.
6. Analyze the distribution costs by responsibility segment to determine the behavior in relationship to the proper activity factor. This should result in the segregation of costs into their fixed and variable elements as well as the determination of the most appropriate activity factor.
7. Where desirable, develop the functional standards and relationships needed for effective control. These may be specific or general, viz., the cost per call; the number of calls per month; the automobile expense per mile traveled; or the percentage of selling expense to sales.
8. Provide for the accumulation of the necessary statistical information for use with the costs, such as number of calls, miles traveled, etc.
9. Determine the most appropriate budget period.
10. In consultation with sales executives as to future plans, giving recognition to past experience and future trends and type of budget needed, prepare the distribution cost budget. This may be expressed in several ways including expected total costs, expected territorial profit, expected product profit, or expected activity units.
11. Make necessary budget revisions as required by changing plans and conditions.
12. Report on budget performance so that the sales executives responsible may take any corrective action which appears warranted. This includes an analysis of any significant departures from planned performance.
13. Continually search for other trends and relationships which, when properly presented to the sales executives, can be of value in guiding distribution activities and in controlling costs.

The more technical phases of the above steps are reviewed in considerable detail in this and the following two chapters.

Necessity for Distribution Cost Analysis. Distribution costs cannot be budgeted successfully as a total amount. There must be at hand detailed information as to the distribution effort and cost required to perform individual distribution functions, carry out specific distribution activities, and secure particular sales results. This usually requires an intensive analysis of the distribution functions and costs.

Distribution cost analysis is broad in its scope. It seeks to study the present method of distribution in comparison with all other possible methods. By implication it is not restricted merely to historical analysis, but may extend to untried processes. It seeks to determine the most effective marketing pattern for the business; it seeks to lay before management the effect of alternative courses of action.

Moreover, the cost analysis of market operations need not, and indeed must not, be limited to the company's distribution segment. That might be fatal; and it certainly would be short-sighted. In many instances distribution cost analysis must consider the effect on the *total distribution* picture, and not merely the segment with which a given manufacturer might be concerned. The particular company may represent but one step in the distribution process.

One other observation: it is to be noted that generally cost analysis is a forerunner of control. Cost analysis seeks to assist management in selecting the proper policy or method, and control subsequently involves the measurement of the actual performance against certain predetermined goals.

The nature of the distribution cost analysis required naturally varies with the needs of the individual concern; however, the basic analyses commonly found useful are:

1. By the nature of cost items or object of expenditure.
2. By functions or functional operations performed.
3. By the manner in which the distribution effort is applied.

In most concerns it is necessary to apply all methods, at least to some extent, in order to supply marketing executives with the information necessary for the efficient planning, direction, and control of distribution effort.

Operating Profit or Contributed Margin? In a review of distribution cost analysis, recognition must be given to the merits of the contribution margin approach.[2] Whereas long-term policy decisions must consider the operating profit of the distribution segment being measured, it is very often true that such figures are not applicable as guides to management for short-term tactical decisions. The contribution margin figure is calculated by deducting from sales income all those costs which would not need to be incurred if the segment being costed were not present. This resultant value is a measure of what the segment contributes to the joint expenses and to over-all company profits. The use of such an approach usually precludes the error of discontinuing a unit where the revenues exceed the out-of-pocket costs (but not total costs). As a practical matter, in distribution cost anal-

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[2] See also pages 184-85.

yses, it will be found advantageous to develop the contribution margin, and then to proceed and deduct fixed or joint expenses to arrive at the operating profit or loss of the segment being measured. An illustration where both approaches are combined in a single statement is shown in Figure 44. In this instance, the segments being measured are products.

THE ILLUSTRATIVE COMPANY
STATEMENT OF MARGINAL AND OPERATING INCOME AND EXPENSE BY PRODUCT LINES
For the Month Ended October 31, 1954

		Products		
Description	Total	A	B	C
Net Sales	$100,000	$50,000	$20,000	$30,000
Less: Variable Cost of Sales	43,000	20,000	13,000	10,000
Manufacturing Margin	$ 57,000	$30,000	$ 7,000	$20,000
Less: Variable Distribution Costs	20,000	15,000	2,000	3,000
Merchandising Margin	$ 37,000	$15,000	$ 5,000	$17,000
Less: Fixed and Allocated Costs				
Manufacturing	$ 3,000	$ 1,000	$ 1,000	$ 1,000
Selling	5,000	2,000	2,000	1,000
Advertising	5,000	2,000	2,000	1,000
Administrative	2,200	1,000	500	700
Total	$ 15,200	$ 6,000	$ 5,500	$ 3,700
Operating Income or (Loss)	$ 21,800	$ 9,000	$ (500)	$13,300

FIGURE 44. Statement of Marginal and Operating Income

Analysis by Nature of Cost Items. The first analysis made of distribution costs is usually by nature of cost items or object of expenditure. Thus, salaries, advertising, supplies, taxes, traveling expense, etc., are recorded separately. Such a classification of cost items is usually made a part of the ledger accounts themselves and forms the basis of subsequent analysis.

An analysis by nature of cost items provides some general information for the planning and control of the costs. If, for example, traveling expense is recorded in a separate account, it will be possible to compare the expense with previous periods and determine the ratio of the expense to sales volume. Such comparisons and relationships may reveal weaknesses if they are extreme; but they will not reveal the fact that the cost per mile of operating salesmen's automobiles is excessive, or that many calls are being made on customers whose business, actual or potential, cannot possibly justify the traveling expense involved. Again, it is possible, by such analysis, to ascertain the percentage of advertising cost to sales; but, if this appears excessive, it is not possible to tell what adjustments should be made to effect a satisfactory relationship. Analysis by nature of cost items is sufficient only when there are no problems as to the efficiency of particular distribution operations; or as to what territories to cover, what commodities to sell, what sales methods to employ, etc. There are few concerns in which these conditions prevail.

By this type of analysis it is possible only to ascertain the cost of the distribution function as a whole. But too many executives know merely how much it costs to *carry on business as a whole,* without knowing the cost of performing specific operations or securing particular results. A sales manager may be told that his selling costs are too high, but such a statement is of no great help in reducing them. Before they can be reduced they must be analyzed to the point where it is known just what operations are too costly or unproductive and who is responsible. An executive cannot base intelligent action on generalities; he must have specific facts.

Analysis by Functions. The analysis of distribution costs by functions and functional operations is particularly valuable for both budgeting and control purposes. It is also useful in extending the cost analysis to the manner or direction of application of sales effort as explained below.

The steps in making a functional analysis of the distribution activity are suggested in this outline:

1. Establish the functional operations which are to be measured, taking care to see that the functions are properly segregated in terms of individual responsibility. Some illustrative functional operations are:
   a) Salesmen's calls on prospects or customers.
   b) Shipments from warehouse.
   c) Circular mailing.
   d) Invoice posting.
2. Provide for a cost segregation of these functions. In this connection the classification should provide for those costs which are direct as to the function. For *cost determination,* perhaps cost allocations should be made. Generally, however, for *cost control,* emphasis must be on the direct expenses only. Thus in a small branch warehouse such expenses as the indirect labor, supervisory salaries, and fuel should be known, but these costs should be distinct from the allocated share of the regional sales office expense chargeable to the branch.

3. Establish units of measurement of functional service to the extent practicable. For example, the pounds of shipments might be the measure of the shipping expense; or the number of salesmen's calls might serve as one measurement of direct field selling expense.
4. Calculate a unit cost of operation by dividing the total controllable functional cost by the number of units.
5. Take corrective action if out-of-line conditions appear. This situation may become more readily apparent if standards are established, and actual performance is measured against them.

It will be appreciated that this method cannot be applied to all distribution costs, but it may extend to a considerable portion of the dollar expenditure.

Moreover, when the cost of an individual function is known, the company may then study the cost of performing the function in other ways, or indeed, whether it ought to be performed at all.

Functional Cost Analysis as a Control Device. The use of functional analysis as a control device may be made clearer by a simple illustration. Assume, for example, that a certain concern has had the following monthly experience relative to certain distribution functions:

PAST EXPERIENCE

Functional Operation	Functional Unit	Number of Functional Units	Total Cost	Unit Cost
Salesmen's calls on prospects	Salesman's call	10,000	$4,000	$4.00
Mailing samples	Individual order	5,000	500	.10
Assembling stock for orders	Item assembled	100,000	3,000	.03
Issuing monthly promotional literature	Customer account	5,000	500	.10

Assume next that standard unit costs are established for the above functional activities and that a sales program is developed for a subsequent month as follows:

STANDARD COSTS AND BUDGET

Functional Operation	Budgeted Number of Functional Units	Standard Unit Costs	Total Budget
Salesmen's calls on prospects	12,000	$4.20	$50,400
Mailing samples	6,250	.09	563
Assembling stock for orders	90,000	.03	2,700
Issuing promotional literature	5,250	.097	509

Assume further that the actual results for the month in question are as follows:

ACTUAL RESULTS

Functional Operation	Actual Number of Functional Units	Total Actual Cost	Actual Unit Cost
Salesmen's calls on prospects	12,100	$49,610	$4.10
Mailing samples	5,575	558	.10
Assembling stock for orders	95,000	3,040	.032
Issuing promotional literature	5,025	487	.097

COMPARISON OF BUDGETED AND ACTUAL COSTS WITH EXPLANATION OF DIFFERENCES:

				Explanation of Difference	
Functional Operation	Total Budgeted Cost	Total Actual Cost	Difference	Volume Factor	Efficiency Factor
Salesmen's calls on prospects	$50,400	$49,610	($790)	$420[a]	($1,210)[e]
Mailing samples	563	558	(5)	(61)[b]	56[f]
Assembling stock for orders	2,700	3,040	340	150[c]	$190[g]
Issuing promotional literature	509	487	(22)	(22)[d]	None[h]
Total	$54,172	$53,695	($477)	$487	($ 964)

[a] 12,100 — 12,000 = 100 units; 100 × $4.20 = $420.
[b] 6,250 — 5,575 = 675 units; 675 × $0.09 = $61.
[c] 95,000 — 90,000 = 5,000 units; 5,000 × $0.03 = $150.
[d] 5,250 — 5,025 = 225 units; 225 × $0.097 = $22.
[e] $4.20 — $4.10 = $0.10; 12,100 × $0.10 = $1,210.
[f] $0.10 — $0.09 = $0.01; 5,575 × $0.01 = $56.
[g] $0.032 — $0.03 = $0.002; 95,000 × $0.002 = $190.
[h] $0.097 — $0.097 = 0; 5,025 × 0 = 0.

ANALYSIS OF RESULTS. The following analysis of results is now possible.

Salesmen's Calls. It was planned to make 12,000 calls on customers; actually, 12,100 calls were made. This number of calls should have cost $50,820 (12,100 × $4.20), actually the cost was $49,610; hence, there was an efficiency saving in this activity of $1,210. Actual performance, which resulted in a cost of $4.10 per call, was above the standard of $4.20 per call.

Mailing Samples. It was expected that 6,250 sample mailings would be necessary; actually, only 5,575 were made. This number should have cost $502 (5,575 × $0.09); actually the cost was $558; hence, this department caused an efficiency loss of $56. Actual performance, which resulted in a unit cost of $0.10, was below the standard, which called for a unit cost of $0.09.

Assembling Stock for Orders. It was expected that 90,000 items of stock would be assembled; actually, 95,000 items were assembled. This number should have cost $2,850 (95,000 × $0.03); actually, the cost was $3,040; hence, there was an efficiency loss of $190. Actual performance, which resulted in a unit cost of $0.032, was below standard, which called for a unit cost of $0.03.

Issuing Promotional Literature. It was expected that 5,250 monthly packets would be prepared and mailed; actually, only 5,025 were sent. This number should have cost $487 (5,025 × $0.097) which was also the actual cost; hence, the performance of this operation was exactly at standard with a unit cost of $0.097.

It should be noted that a comparison of the budget and actual costs in themselves does not give a true picture of the results. The cost of salesmen's calls, for example, is $790 less than budgeted, but the actual savings effected in this activity is $1,210. In the mailing of samples there is a reduction of $5 from the budget, but actually there has been an efficiency loss of $56.

In such analysis as this it is usually desirable to include in the costs only the items which are subject to control by those whose performance is being measured.

While the foregoing illustration is extremely simple, it suggests the value of functional analysis as an instrument of cost control. Such procedure is applicable to a considerable amount of the distribution activities.

However, the limitations also should be recognized. Thus, it is possible for the salesman to make too many calls—all of them too short and consequently ineffectual. The interpretation of functional analyses must be carefully done.

This functional approach is closely related to distribution cost standards which are discussed in the next chapter.

Analysis by Manner of Application. While analyses of distribution costs by nature of items and functions has some value for cost control purposes, they do not aid greatly in planning the direction of the distribution effort. Distribution effort, even though efficiently exercised, will be unproductive unless given proper direction. It is one thing to have an organization which may efficiently perform some individual functions, and quite another matter to make certain that the performance is so directed and coordinated as to achieve the most fruitful results. Ultimately it is necessary to extend the cost analysis to a point which reveals the manner in which the distribution effort is being applied. This is necessary in order to relate effort and cost to results obtained, to adjust the effort to sales possibilities, and to balance properly the distribution factors.

The analyses to be made by a particular concern in developing its budget and control procedure depend upon its individual method of organizing and directing sales effort. The analyses most frequently needed are:

1. By territories—for example, districts, branch areas, salesmen's territories, trade centers, states, counties, or cities.
2. By commodities—for example, individual commodities or related groups of commodities.
3. By channels of distribution—for example, to wholesalers, retailers, or ultimate consumers.
4. By methods of sale—for example, through salesmen, mail order, company stores, house-to-house solicitation, and so forth.
5. By classes of customers—for example, customers with large or small annual purchases.
6. By size of orders—for example, the cost applied to securing, handling, and filling orders of varying size, measured in money.
7. By organization and operating divisions—for example, branches, departments, stores, etc.
8. By salesmen—that is, the cost applied to the work of individual salesmen or groups of salesmen.
9. By method of delivery—for example, over-the-counter, delivery-on-request, store-door delivery, peddler trucks, etc.
10. By size or number of physical units—for example, full and broken cases, gross and fractions of a gross, carload and less than carload lots, etc.
11. By terms of sale—for example, cash, short-term credit, instalment, etc.

It should be understood that not all of these analyses are usually necessary in any one concern; and that such analyses as are used need not all be made continuously. Certain of them, such as analysis by channels of distribution, may be found necessary only once a year. Others may be the subject of special studies, to be utilized only when it is necessary to localize weakness. In some instances it is desirable to make cross-analyses. Thus, sales and costs may be analyzed by territories; and the cost of each territory then further subdivided according to commodities or size of customer order.

In making any analysis by manner of application, an important consideration is the proper segregation of costs. The value of the cost study will depend in large part on this factor. For this type of analysis, distribution costs may be divided into three main groups: direct costs, semidirect costs, and indirect costs. As the name implies, direct costs are those immediately identified with a segment and need no allocation. For example, in an analysis by salesman, the field expense of salary, traveling expense, and entertainment incurred by that salesman is direct. However, in an analysis by product these expenses might be semidirect or indirect. Expenses which are direct in one application are usually not in another. Ordinarily, the classification of accounts is such that one application is direct for many of the expenses.

Semidirect costs are those related in some measurable way with the particular segments under study. The variability factor which is responsible for the amount of the expense is known and recorded quantitatively, and the costs may be distributed in accordance with the service required. Thus the cost factor of the warehousing function might be pounds handled. The order-handling costs might relate to number of item-lines. Stated in other terms, the basis of allocation is less arbitrary than a basis selected at random, such as net sales; and the cost results are therefore of more significance. This might be said to be the distinction between the semidirect costs and those other common or joint costs here designated as indirect.

Indirect expenses are a general charge against the business and must be allocated on a more or less arbitrary basis. No simple measure is available to identify the expense with one territory or product, as distinguished from any other. In practice this may be found to be due as much to records kept as to the nature of the expense. Common examples are institutional advertising or the salaries of general sales executives. There perhaps is little relationship between institutional advertising and the sales in the Western territory as contrasted with the Middle Atlantic territory. There might be little relationship between the costs of general sales administration and sales of product X as compared with product Y. Of course, where it is practicable for the general sales executive to keep a time record, the allocation of the expense may be less arbitrary, and of more significance.

As a general matter, the advisability of making arbitrary allocations of indirect costs may be questioned. To arrive at a final profit or loss figure such a proration is necessary. However, those who use the figures should be informed of the extent to which these arbitrary allocations have been used, and subtotals of results before apportionment of indirect expenses are desirable.

Technique of Analysis by Manner of Application. There has been sufficient experience with distribution cost analysis by manner of application to prove the value of the technique. While the degree of refinement may vary in different companies, the general approach may be outlined as follows:

1. Select the analysis which is to be made.
2. Classify the distribution costs as to those which are direct, semidirect, and indirect.
3. Select and apply the bases of allocation to the semidirect and indirect expenses. Included in such a step would be the proper segregation and treatment of *fixed* costs as distinguished from *variable.*
4. Prepare the analysis and commentary for the use of the proper executive. This will involve the following steps in arriving at significant cost and profit relationships:
   a) Determine the gross profit by segment (e.g., territory, product, size of order, etc.).
   b) Accumulate the direct expense by segment, and deduct this from gross profit to arrive at *profit after direct expense.*
   c) Distribute the semidirect expenses, and deduct these to arrive at *profit after semidirect expense.*
   d) Prorate the indirect expense to arrive at the final *net profit.* (In some instances steps *c* and *d* will be combined.)
   e) Prepare the necessary subanalyses to pinpoint the conditions needing correction.

One of the most common types of analyses by manner of application—territories—is explained in the succeeding section. It is beyond the scope of this volume to discuss in detail the making of all such analyses; but the subject is considered in detail in a book by one of the authors.[3]

Analysis by Territories.[4] A territory may be defined, for this purpose, as any geographical area, whether city, trading area, county, state, or sales district, which is used by a company for sales planning, direction, or analysis. Where, or in which territory, goods are sold has a great effect on the net profit. There are striking variations between territories as to sales potentials, as to net profit, and as to gross margins. If goods are sold f.o.b. a central point and at the same price, the gross profit, of course, is unchanged. But if the product is sold on a delivered price basis, the gross margin is different because of transportation charges. In different areas the consumers' wants and needs are different, and this factor affects the total gross margins. Even aside from these considerations, experience has shown that the distribution costs, the costs to sell, are different in different territories. The cost to sell in densely populated New York is much different from the cost to sell in western Texas. Because of all these dissimilar conditions, businessmen must have an analysis of distribution costs by territories. Such information permits the sales manager to rearrange sales effort where necessary, and direct sales effort into the most profitable areas. Control of distribution costs is facilitated through this same analysis, perhaps with the aid of distribution cost standards. Sales planning, of course, with respect to new territories and new markets is affected by distribution cost considerations.

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[3] *Op. cit.*

[4] This section is adapted from *Controllership—The Work of the Accounting Executive,* by J. Brooks Heckert and James D. Willson (New York: The Ronald Press Co., 1952), pp. 78-80. An illustrative analysis by commodities is discussed on pp. 80-82 of the same publication.

Not every concern will find analysis by territories necessary. It applies largely in those instances where a large geographical area is covered. Thus, a manufacturer covering a national market would greatly benefit from such an analysis, whereas a retail store probably would not. Exactly what type of territorial analysis need be made depends on the problem and type of organization. If a territorial sales executive is largely responsible for costs and results, a complete analysis by this responsibility area is desirable. Or if the problem is one of costs to sell in small towns versus cities, such a segregation is to be made.

An illustrative statement of income and expense by territories is shown in Figure 45.

Once the points of weakness are discovered through analysis, it remains to take corrective action. Suggestive of the possibilities are the following:

1. Reorganization of territories to permit effort more nearly in line with potentials.
2. Rearrangement of territorial boundaries to reduce selling expense, secure better coverage, etc.
3. Shifting of salesmen.
4. Increased emphasis on neglected lines or customers in territory.
5. Change in method of sale or channel of distribution (shift from salesman to agent, etc.).
6. Changes in physical facilities (warehouses, etc.) in territory.
7. Elimination of unprofitable territories (potentials of area and out-of-pocket costs vs. allocated costs considered).
8. Change in advertising policy or expenditure in territory.

Many such points should be considered in preparing a satisfactory budget for distribution costs—the plan for selling products during the period under budget.

THE R COMPANY
STATEMENT OF INCOME AND EXPENSE BY SALES TERRITORY
For the Month Ended January 31, 1955

			TERRITORY							
	TOTAL		WEST		MIDDLE WEST		MIDDLE ATLANTIC		NEW ENGLAND	
Description	Amount	% of Net Sales	Amount	% of Net Sales	Amount	% of Net Sales	Amount	% of Net Sales	Amount	% of Net Sales
GROSS SALES.............	$840,000		$50,000		$390,000		$240,000		$160,000	
Less:										
Freight.................	$ 35,359		$ 4,200		$ 13,500		$ 10,750		$ 6,909	
Returns.................	5,000		750		1,050		1,840		1,360	
Allowances.............	10,650		670		3,890		3,750		2,340	
Total Sales Deductions.	$ 51,009		$ 5,620		$ 18,440		$ 16,340		$ 10,609	
Net Sales.................	$788,991	100.00	$44,380	100.00	$371,560	100.00	$223,660	100.00	$149,391	100.00
Cost of Sales..............	550,127	69.73	31,066	70.00	241,514	65.00	167,745	75.00	109,802	73.50
Gross Profit..............	$238,864	30.27	$13,314	30.00	$130,046	35.00	$ 55,915	25.00	$ 39,589	26.50
Direct Selling Expenses.....	45,568	5.78	2,219	5.00	16,720	4.50	20,129	9.00	6,500	4.35
Profit After Direct Selling Expenses...............	$193,296	24.49	$11,095	25.00	$113,326	30.50	$ 35,786	16.00	$ 33,089	22.15
Semidirect Expenses.......	17,854	2.26	1,000	2.25	7,800	2.10	6,330	2.83	2,724	1.82
Profit After Semidirect Expenses...............	$175,442	22.23	$10,095	22.75	$105,526	28.40	$ 29,456	13.17	$ 30,365	20.33
Allocated Share of General Expenses...............	15,780	2.00	888	2.00	7,431	2.00	4,473	2.00	2,988	2.00
Net Profit Before Income Taxes.................	$159,662	20.23	$ 9,207	20.75	$ 98,095	26.40	$ 24,983	11.17	$ 27,377	18.33
OTHER DATA										
Units Sold..............	36,692		2,000		17,333		10,550		6,809	
Sales Potential..........	$850,000		$85,000		$400,000		$225,000		$140,000	
% of Potential..........	92.8		52.2		92.9		99.4		106.7	

FIGURE 45. Statement of Income and Expense by Sales Territory

Chapter 17

DISTRIBUTION COST STANDARDS

Purpose of Distribution Cost Standards. In developing the distribution cost budget and subsequently controlling the actual cost, it is necessary not only thoroughly to analyze the distribution costs, as outlined in the preceding chapter, but also to establish standards of distribution effort, cost, and results. It is necessary not only to correlate sales effort with sales potentialities and to give proper direction to the distribution effort, but also to know what the cost should be of performing various distribution activities and what results should be obtained from such activities. Even the profit or loss revealed by the analysis is not a safe test of efficiency of performance. It is possible to conduct a business with 100% efficiency and yet for a time it may be unprofitable; and, conversely, by some gratuitous circumstance, the business may be highly profitable for a time even though operated inefficiently.

A complete analysis of past operations must be taken as a starting point. By this we may determine that 1,000 calls have been made by salesmen in a given territory, at a cost of $5 per call, and with certain sales results. But the questions are left unanswered as to how many calls should have been made by the salesmen, and what the cost per call should have been. These must also be ascertained if effective control of sales effort is to be exercised. We may know that 1,000 orders have been handled at a clerical cost of 50 cents per order; but we need to know also what the cost would have been if the clerical work had been efficiently directed. In brief, we need standards or measuring sticks by which to judge the distribution performance and signal its weaknesses. Knowing in detail what it has been, we need also to know in detail what it should be in the immediate future.

While standards have come to be accepted as essential to the efficient control of production costs, it is only comparatively recently that much consideration has been given to their application to distribution costs.

Can Standards Be Established for Distribution Activity? It would be foolish to contend that all distribution activity can be highly standardized. In fact, it is never possible completely to standardize production activities. Just exactly what results should be obtained from a dollar expended for advertising or direct sales effort when developing a new territory or a new product; or just what costs will be necessary to accomplish certain definite ends pertaining to customer goodwill, is frequently problematical. But it would be equally foolish, and a fatal management error, to evade the fact that standards can be successfully applied to a vast amount of the distribution activity. If no one is competent to judge what distribution effort is necessary to secure certain results and what it will cost to do it, then management must indeed be in a helpless position.

While a new venture may be undertaken here and there on something of an experimental basis, the entire distribution effort will scarcely be directed along such lines continuously. It is hardly to be expected that an intelligent executive will direct a million dollars into distribution effort in the vain hope that profit will result at the end of the year. Rather, he may be expected to provide for the continuous measurement of individual and group performance as expressed in costs and results. He will want to know when billing clerks are wasting time, when automotive equipment is too costly, when direct mail pieces fail to "pull," when sample expense is excessive, when warehouse labor hours are too high, when long-distance telephone costs are exorbitant, and when salesmen produce insufficient orders. If these cost and performance factors are not under constant control, his hope of profit is almost certain to be unfulfilled. But such control implies standards, and depends entirely upon the establishment and use of standards. Warehouse labor hours never appear too high in the absolute. They become too high only when measured against what they should be under the circumstances—only when a standard is applied.

While it must be admitted that it is difficult to establish standards for some distribution activities; that psychological factors are relatively more, and physical and mechanical factors relatively less, influential than in production; that relatively more depends upon the judgment of executives and relatively less upon objective measurements; and that a somewhat greater tolerance must be allowed in the consideration of variances; yet it should be understood that this applies only to a part of the distribution activity. Much of the distribution activity is fully as measurable as production. There is no important difference, for example, between the method of establishing standards for order-handling, warehousing, shipping, delivery, and clerical work and the methods employed in production. Even those distribution activities which are largely affected with psychological factors, such as advertising and personal selling, are usually capable of reasonably accurate measurement when the activities are continuous or repetitive.

Characteristics of Distribution Standards. Essentially, a standard is a criterion of satisfactory performance under a given set of circumstances. Distribution standards are used primarily as control tools. Therefore, they should not represent ideal standards which would be attainable only under the most favorable conditions. Instead, the standards should represent that level of performance attainable with reasonably diligent effort.

Just as production standards must apply to both cost and quality of output, so must the distribution standards apply to both cost and results. Not only must the various distribution functions be performed at satisfactory costs but also the effort must be productive of sufficient sales volume to justify the cost.

To be effective for cost control purposes, the standards must be reduced to the measurement of individual activity or performance. It is not sufficient to know that traveling expenses on the whole are in excess of standard; it must be known which particular men are exceeding the standard. In some instances the measurement may apply to small groups where close personal supervision can be exercised over the group. Thus, a unit billing cost may be applied to the billing clerks as a whole as a measure of the success of the supervisor. It is then up to him or her to detect the individuals who are responsible for lowering the average performance. As a general principle, however, the standards should be directed to the point of individual responsibility.

Since standards are to be used as measures of individual performance, they should be so designed as to measure only those factors over which the individual responsible has control. A warehouse manager, for example, may have control over the labor hours used in his division but his rent and occupancy costs may be fixed by the general management. Such cost standards as are used to measure his performance should exclude the noncontrollable costs.

How to Set the Distribution Cost Standards. The *first* step in setting the distribution cost standards is to classify the costs according to functions and activities expressive of individual responsibility. How far such classification can and should be carried depends of course on the nature of the business, its size, methods of operation, and internal organization. The cost of such major functions as direct selling, advertising, transportation, and warehousing can be separated in most businesses and subjected to individual study and control. Even such a general classification as this is not universal. For example, in a baking concern, doing a house-to-house business, the functions of direct selling and credit and collection are merged, since the work is done by the same men under the same supervision.

The costs of the major functions should be further classified by individual activities which make up the functional service. For example, the order handling costs may be separated into preparation of masters on incoming order, processing order to factory, follow-up, posting inventory record, completing file, etc.

The *second* step is to select units or bases of measurement through which the standards can be expressed. Such units or bases will vary with the type of measurement which is to be applied; thus, the measurement may apply to effort used, to cost, to results achieved, or to the relationship of these factors. To illustrate, a salesman may be expected to make a given number of calls per day. This constitutes a measure of effort used and the unit of measure is the call. The cost of writing orders in the order department may be measured in terms of orders or number of lines written on a given order. This is a measure of cost and the unit of measurement is the order or order line. Again, the salesman may be expected to produce a certain number of orders or to secure a certain number of new accounts. These are measures of results and the units of measurement are orders and new accounts. Finally, a salesman may be required to hold his direct costs within 10% of his sales volume. Here the measurement is in terms of relationship of particular costs to results in sales volume and the basis of measurement is the ratio of one to the other.

While such specific units of measurement are not available for all distribution activities, some basis must be selected before the standards can be applied. Where specific units are not available, more inclusive or composite bases must be used. For example, the entire credit and collection cost may be measured by the number of accounts carried; or the entire advertising cost may be measured by its ratio to dollar sales volume.

The *third* step is to analyze past experience relative to the cost of the functions and specific activities involved with a view to selecting the best experience and indications as to the best procedure. This may involve intensive study of individual methods of procedure and operation similar to that employed in the development of production standards.

The *fourth* step is to consider the effect on costs of expected changes in external conditions and of the sales program as planned. If increased sales resistance is expected, an estimate must be made as to its effect on such costs as advertising and direct selling. If the program calls for a lengthening of the instalment credit period, the effect on the financing cost must be estimated.

The *final* step is to summarize the judgment of those executives, division heads, department heads, and salesmen whose experience and training qualify them to judge the measures of satisfactory performance. The standard set must be the ultimate expression of such judgment, based upon an intelligent study of past experience and future outlook.

Standards as finally set will result in much overlapping. Thus, a standard cost may be applied to the warehousing function as a whole. Within this general function many individual cost standards may be applied which relate to specific activities such as clerical costs of order handling and physical assembling.

Finally different standards must frequently be set for different territories, products, channels of distribution, classes of customers, departments, etc., wherein different conditions prevail.

Flexibility of Standards. As stated previously, the distribution standards may serve as measures of both costs and results. Where the standards are used to measure costs, consideration must be given to the effect on the costs of variations in the amount of distribution services rendered. Where there are elements of fixed cost, the cost per unit of service will vary with the volume of service provided. For example, the transportation department may have a large investment in trucks with heavy fixed costs such as depreciation, insurance, taxes, licenses, permits, etc. If the tonnage which is being handled is suddenly reduced, the total cost per ton will obviously rise. In such cases different unit cost standards may be set for different volume levels or the standards may be applied only to the variable costs. Not infrequently, both plans can be used.

General and Divisional Standards. Some very general standards can be applied to the distribution cost as a whole. For example, the following may be used:

1. Cost per dollar of net sales.
2. Cost per dollar of gross profit.
3. Cost per unit sold.
4. Cost per sales transaction.
5. Cost per order received.
6. Cost per account sold.

While such over-all standards are of no value in signaling specific points of weakness, they are indicative of trends and are useful as general measures of the success of the entire distribution program. Moreover, where the costs are properly analyzed, such standards can be applied not only to the business as a whole but also to individual territories, products, channels of distribution, classes of customers, branches, departments, and stores.

Who Should Set the Standards? The standards for distribution activities should be set by those executives who are best qualified by training and experience to judge what constitutes good performance. This is usually the joint responsibility of sales, sales research, and accounting executives. The sales and sales research executives must supply the information pertaining to market potentialities and sales methods while the accounting executives must provide the analyses of past performance, trends, and relationships. Jointly they must interpret these data in the light of future possibilities.

Moreover, the functional distribution executives, salesmen, and others whose performance is to be measured, should be consulted and their counsel carefully cultivated. Men on the "firing line" frequently have an insight into the immediate problems faced which does not reach to general executives. The setting of standards of performance and the infusion into an organization of a will to meet them, are by no means a statistical problem alone; they are largely a psychological problem, and should be so approached. Men will respond to a task when persuaded, by the logical presentation of factual data which they understand and believe to be true, that the task is fair and reasonably attainable. But no amount of enthusiasm can long be sustained in the face of uncertain facts or false logic. Distribution activities are performed largely with people rather than machines; counsel must be had with those whose performance is to be measured and the standards, when finally determined, must be accepted by them as fair and reasonable.

Revision of Standards. Many external influences affect distribution costs and results and the distribution procedure is characterized by flexibility; hence, any measures of cost and results must be subject to constant review and revision. To some executives this difficulty looms so large as to nullify any attempt at setting standards. The authors do not share this view. There is no escape from the fact that considerable revision is required in most concerns, if standards are to be fully effective; but the difficulty can be easily exaggerated. Much of the work of distribution offers no greater problem in this respect than production, where it is now accepted as a matter of course. If an orderly program is developed for continuous review and revision, reasonably accurate standards can be maintained for by far the larger part of the distribution cost.

Use of Standards. Standards are primarily a tool of control by which performance is held to what it should be. If it is known what effort should be applied and what is actually being applied, what the costs should be and what they are, what results should be secured and what are actually being secured; and, if the responsibility for unsatisfactory performance can be definitely placed, a concern is in a position to control operations. This can be effected by the prompt reporting of adverse variances with full investigation of cause and responsibility. Standards are also essential to a satisfactory budget procedure. The development of the future program must be predicated upon a knowledge of what can be done and what it will cost to do it.

Additional Information Needed. To establish and use distribution cost standards successfully, a concern must accumulate and have available a considerable amount of information relative to distribution activities and the cost factors pertaining to such activities. This includes considerable information not available in the regular accounting records. Permanent records must be designed for regularly recording and accumulating these data in readily usable form. Just as it is now the custom regularly to record such production factors as labor hours, chargeable hours, idle hours, machine hours, power loads, number of operations, etc.; so, likewise, records must be made of the distribution factors.

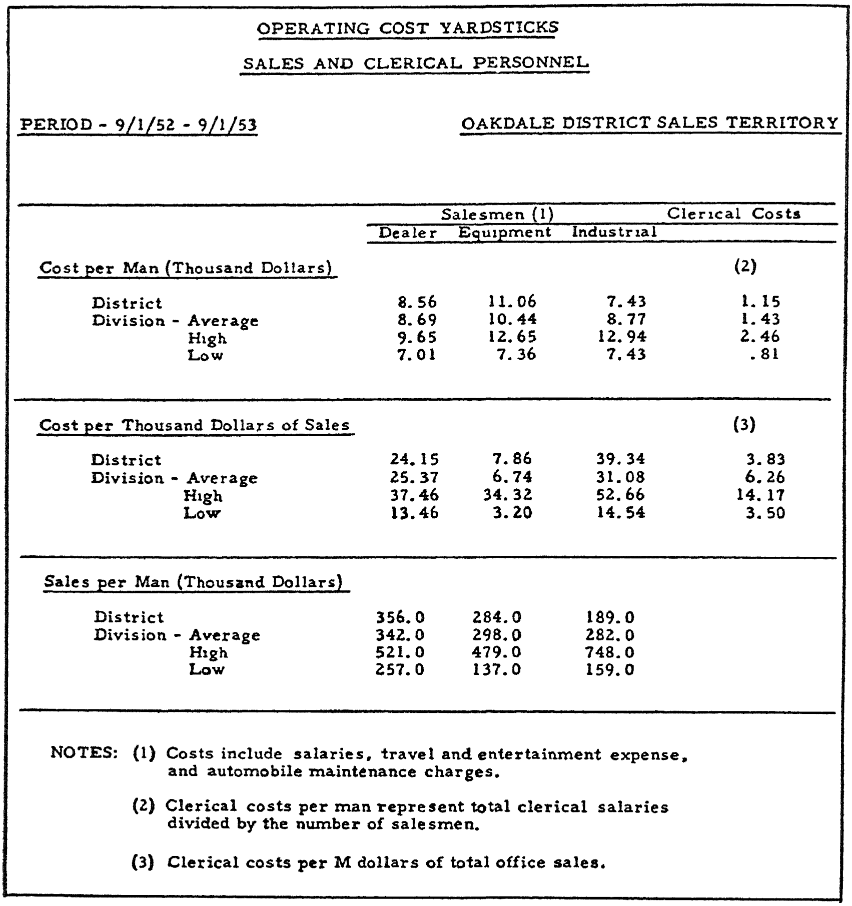
Illustrative of such factors are the following:

1. Analyses of sales in physical units.
2. Number of sales transactions classified as to size, hour of day, etc.
3. Number of quotations made.
4. Number of orders classified as to size, period in which received, etc.
5. Number of order lines written.
6. Average number of salesmen.
7. Number of salesmen-days.
8. Number of calls on old and new customers.
9. Number of days of salesmen's travel.
10. Number of miles of salemen's travel.
11. Average number of customers classified as to location, annual volume, etc.
12. Number of labor hours of: salespeople, advertising and display people, warehouse workers, truck drivers, deliverymen, maintenance workers, clerical workers, etc.
13. Number of returns and allowances classified as to cause.
14. Number of units of advertising space or time used in the various advertising media.

15. Number of advertising pieces mailed: letters, circulars, folders, calendars, etc.
16. Number of pieces of advertising material distributed: window cards, store displays, inserts, etc.
17. Number of samples distributed.
18. Number of demonstrations made.
19. Number of inquiries received.
20. Number of new customers secured.
21. Number of shipments.
22. Analyses of shipments in physical units.
23. Dollar value of shipments.
24. Number of ton-mile units of shipping.
25. Number of deliveries.
26. Number of parcels delivered.
27. Number of miles of truck operation.
28. Number of shipping claims handled.
29. Physical volume of goods handled in warehouses.
30. Average size of physical inventory carried.
31. Rates of turnover in dollars and physical units.
32. Average number of accounts carried.
33. Number of invoices.
34. Number of invoice lines.
35. Number of remittances received.
36. Number of mail pieces handled.
37. Number of postings.
38. Number of letters written—distribution sections.
39. Number of units filed.
40. Number of tabulating cards punched.

Many of the above items must be further classified by territories, commodities, departments, etc., to supply the full information needed.

Such information will be found useful for many purposes in the direction of distribution activity but is essential to a program of standards. Many concerns have in the past neglected to accumulate and use such information. It is not uncommon to find a concern which has the most exacting records of a production machine—the date of its purchase, full detail as to its cost, working hours, number and cause of idle hours, cost of maintenance, etc.; almost to the point of a complete diary of the machine's daily routine over a long period of years. During the same time, the concern may have been employing a salesman whose total cost through the years has greatly exceeded the cost and maintenance of the machine, but little detailed record of his activities has been kept. How he has spent his time, the number of calls



OPERATING COST YARDSTICKS

SALES AND CLERICAL PERSONNEL

PERIOD - 9/1/52 - 9/1/53

OAKDALE DISTRICT SALES TERRITORY

	Salesmen (1)			Clerical Costs
	Dealer	Equipment	Industrial	
Cost per Man (Thousand Dollars)				(2)
District	8.56	11.06	7.43	1.15
Division - Average	8.69	10.44	8.77	1.43
High	9.65	12.65	12.94	2.46
Low	7.01	7.36	7.43	.81
Cost per Thousand Dollars of Sales				(3)
District	24.15	7.86	39.34	3.83
Division - Average	25.37	6.74	31.08	6.26
High	37.46	34.32	52.66	14.17
Low	13.46	3.20	14.54	3.50
Sales per Man (Thousand Dollars)				
District	356.0	284.0	189.0	
Division - Average	342.0	298.0	282.0	
High	521.0	479.0	748.0	
Low	257.0	137.0	159.0	

NOTES: (1) Costs include salaries, travel and entertainment expense, and automobile maintenance charges.

(2) Clerical costs per man represent total clerical salaries divided by the number of salesmen.

(3) Clerical costs per M dollars of total office sales.

FIGURE 46. Illustrative General Selling Expense Standards

made, the number of prospects interviewed, orders received, gross profit, and even the type of goods sold, have not always been recorded.

If the distribution program is to be intelligently guided, the statistical information necessary for the task must be collected.

Illustrative Application. The illustration described on pages 240 to 242 indicates how functional standards may be of use as a control device.

Some companies apply standards in a much more general way. Figure 46[1] illustrates the type of information provided by the distribution cost accountant to the sales manager. Reports in this form are provided for each sales territory *annually;* and, in addition, a summary is prepared. With such data, the sales manager readily can compare performance in the various territories. This information is useful in preparing the budgets for the coming year.

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[1] From "Performance Yardsticks for Sales Management," by J. Gregg Royer, *N.A.C.A. Bulletin,* November, 1953, p. 314.

Chapter 18

DISTRIBUTION COST BUDGET—APPLICATION

The Budget Procedure. The *general* procedure for the effective budgeting and control of distribution costs was outlined in Chapter 16. It will now be assumed that the underlying and preparatory tasks have been accomplished; that the budget supervisor or controller has the necessary background of the distribution activities; that arrangements have been made for the segregation of *significant* costs by responsibility; that analyses have been made as guides in selecting the most profitable combination of distribution activities; that functional standards have been developed; that the necessary statistical information is being accumulated; and that the budget period has been selected. In short, the problem is one of establishing a fair budget for each distribution activity, now that policy has been set and necessary information has been made available.

The real test, the acid test, of budgeting is whether or not it enables the company to be more profitable than without its use. Costs are analyzed to control and reduce them. In turn, costs are controlled and reduced with the objective of maintaining or increasing the profit margin. This is mentioned because it has a significant application in distribution cost budgeting.

With this understanding, the question is posed as to just how specific distribution costs should be budgeted.

Selecting the Type of Budget Needed. The great variety of distribution activities and varying problems of manufacturing, wholesaling, and retailing concerns in different industries makes it somewhat useless to set forth a rigid procedure which can be followed in the establishment and use of a distribution cost budget. Moreover, even in a given company there are different types of distribution costs; so that it is usually not advisable to use only one technique in budgeting these costs. There are, however, certain steps which may be suggested as a guide. Knowledge of each activity will result usually in a given basis being singled out as being the most appropriate. Distribution activities may be classified into four basic groups, according to the most practical method of control:

1. Appropriation or project type.
2. General or administrative type.
3. Standardized type.
4. Competitive service type.

There are certain similarities in the cost behavior of each of these groups, so the segregation depends primarily on the type of budget or control which has been decided upon.

Appropriation or Project Type Activities. Activities under this general classification are not directly related to any volume factor, such as sales, units handled, etc., and are usually operated on a project basis. Typical of this class of distribution activity would be advertising and sales promotion, which are discussed in the next chapter, or market research, or sales engineering. The steps involved in this area include:

1. Determination of a general program necessary for long-term sales effectiveness.
2. Establishment of individual projects, including estimate of costs (and sometimes man-hours).
3. Comparison of actual and estimated-to-complete expenses with budget.
4. Periodic review of projects—their status and results accomplished.

This is a fixed type of budget, subject to change at the time of the quarterly or periodic review. An illustrative budget, and comparison with actual, is shown in Figure 47. An estimate by project is made, giving consideration to the approximate *level* of expense per period, based on the staff size. It should be realized that the effectiveness of control depends fundamentally on wise planning of projects, and effectiveness in carrying out the individual functions making up the projects.

General and Administrative Type. Distribution functions coming under the general and administrative category are characterized by inability to measure tasks on a quantitive basis even though a certain number of recurring and routine duties exist, and by the existence of payroll expense as the singularly large item. Typical of this area would be the costs of the office of the general sales manager or divi-

THE ILLUSTRATIVE COMPANY
MARKET RESEARCH DEPARTMENT
PROJECT BUDGET REPORT
For the Four-Week Period Ended December 26, 1954

Project		Period Costs									
No.	Name	Salaries and Wages	Consultants' Fees	Other Expense	Total	Cumulative Cost	Outstanding Commitments	Estimated Cost to Complete	Indicated Total Cost	Project Budget	Indicated Cost (Over) or Under Budget
	MARKET POTENTIAL STUDIES:										
77	Household Towels	$ 2,310	$ 1,230	$1,230	$ 4,770	$16,310	$ 2,400	$ 7,100	$ 25,810	$ 30,000	$4,190
78	Wax Paper—Suppl. 6	385	–	475	860	1,634	222	–	1,856	1,900	44
80	Industrial Rags	2,980	1,000	1,119	5,099	12,342	920	5,200	18,462	18,000	(462)
83	Toilet Tissue	5,000	8,000	3,000	16,000	7,000	1,000	3,000	11,000	13,000	2,000
85	"R" Grade Industrial Towels	702	–	610	1,312	5,420	–	1,300	6,720	6,800	80
	Total	$11,377	$10,230	$6,434	$28,041	$42,706	$ 4,542	$16,600	$ 63,848	$ 69,700	$5,852
	PRODUCT ACCEPTANCE SURVEYS:										
126	New York—Product "X"	$ 500	$10,000	$ 500	$11,000	$11,000	$ –	$ 2,000	$ 13,000	$ 15,000	$2,000
127	Boston—Product "X"	1,000	4,000	500	5,500	5,500	1,000	1,000	7,500	7,000	(500)
128	Philadelphia—Product "X"	–	1,000	–	1,000	1,000	6,000	2,000	9,000	10,000	1,000
129	Los Angeles—Product "S"	722	–	350	1,072	1,072	–	22,000	23,072	23,000	(72)
130	San Francisco—Product "S"	–	2,000	–	2,000	3,000	–	5,000	8,000	10,000	2,000
	Total	$ 2,222	$17,000	$1,350	$20,572	$21,572	$ 7,000	$32,000	$ 60,572	$ 65,000	$4,428
	OTHER:										
602	Revamping of Call Reports	$ 600	$ –	$ 150	$ 750	$ 1,750	$ –	$ –	$ 1,750	$ 1,750	$ –
604	Analysis of Sales Scheduling	700	–	50	750	2,900	–	100	3,000	2,500	(500)
	Total	$ 1,300	$ –	$ 200	$ 1,500	$ 4,650	$ –	$ 100	$ 4,750	$ 4,250	$ (500)
	Grand Total	$14,899	$27,230	$7,984	$50,113	$68,928	$11,542	$48,700	$129,170	$138,950	$9,780

FIGURE 47. Project Budget Report—Market Research Department

sional sales executives. The budget approach in this instance would include:

1. Determination of the probable monthly staff requirement and level of expense, by type of item, taking into account level of activity and functions to be performed.
2. Comparison of these costs with those of prior periods.
3. Examination of functions for possible eliminations.
4. Making of usual period comparison of budget and actual expenses.
5. Making of over-all test of cost level by use of general yardsticks such as:
   - *a*) Percentage of net sales.
   - *b*) Cost per salesman.
   - *c*) Cost per unit sold.

A suggested monthly budget report is shown in Figure 48. It should be noted that in this area, a basic assumption is that the costs are fixed in nature over the short term.

THE BEST MANUFACTURING COMPANY
BUDGET REPORT

Dept. Head S. Jones
Month July Department Product Sales No. 610

	Current Month			Year-to-Date		
Description	Budget	Actual	(Over)/ Under Budget	Budget	Actual	(Over)/ Under Budget
Personnel:	5	5	–	5	5	–
Expenses:						
Salaries	$2,800	$2,800	$ –	$19,600	$19,600	$ –
Traveling Expense	800	750	50	5,600	5,700	(100)
Supplies	100	110	(10)	600	550	50
Telephone	250	200	50	1,750	1,600	150
Dues and Subscriptions	50	–	50	350	400	(50)
Total	$4,000	$3,860	$140	$27,900	$27,850	$ 50
General Measures:						
Expenses as % Net Sales	2.00	1.93		2.00	2.00	
Cost per Salesman	$400	$386		$2,790	$2,785	
% (Over) Under Budget			3.5			0

Remarks:

Issued by Accounting Dept. ________

Figure 48. Administrative Sales Department—Budget Report

Standardized Activities. This grouping contemplates those activities which are quite repetitive in nature and can be measured on a quantitative basis. Illustrative would be the stock handling function in a branch warehouse.

The detail steps involved are described in the preceding chapters. Basically, however, they are as follows:

a) Currently, and for initial budget determination, the costs must be segregated by functions.
b) In determining a budget or standard these costs should be analyzed into their fixed and variable expense elements, as discussed on pages 64-66.
c) For a given period, the budget should be calculated as the fixed expense plus the unit allowed cost times the units handled; and comparisons made with actual expense.
d) Corrective action should be taken when out-of-line conditions appear.

A budget determined on such a basis, and the comparison with actual, is shown in Figure 49. It can be seen that this approach is substantially similar to that used in many manufacturing operations.

Another somewhat similar application can be used with respect to field selling expense, as illustrated in Figure 50. In this instance, territorial standards have been determined and the salesman has been informed of the expected costs. The budget is based on a planned schedule as follows:

Item	Basis of Allowance
Hotel	Per diem standard allowance
Meals	" " " "
Laundry and Valet	" " " "
Entertainment	" " " "
Telephone and Telegraph	Standard allowance per month
Travel	
Auto	Scheduled miles at standard rate
Railroad	Actual cost, based on trips scheduled
Pullman	" " " " " "
Plane	" " " " " "
Other	Specific authorization

This technique can be more productive in that the allowance relates to the actual operations to be undertaken. It avoids fixed allowances per month which may be unrelated to the planned activities of any given month. Moreover, emphasis is placed on year-to-date performance rather than on that of a single month. It is to be noted that budget plans provide for a certain number of days traveled which is compared with actual. If necessary, the excess cost, if any, can be

THE JONES COMPANY
BUDGET REPORT
LOS ANGELES WAREHOUSE

Department Head Smith

Department Stock Handling

Month March, 1954

Units Handled 1,000,000

Description	Current Month					Year-to-Date	
	Budget						
	Fixed	Variable	Total	Actual	(Over) Under Budget	Actual	(Over) Under Standard
Salaries	$1,000	$ 300	$ 1,300	$ 1,250	$ 50	$ 3,800	$ –
Wages	500	12,000	12,500	12,470	30	38,270	(450)
Subtotal	$1,500	$12,300	$13,800	$13,720	$ 80	$42,070	$(450)
Supplies	100	100	200	225	(25)	700	50
Gasoline and Oil	50	300	350	370	(20)	1,150	(150)
Repairs—Labor	25	100	125	100	25	450	(200)
Material	25	100	125	125	–	375	–
Miscellaneous	–	50	50	45	5	140	10
Depreciation	100	–	100	100	–	300	–
Property Taxes and Ins.	20	–	20	20	–	60	–
Total	$1,820	$12,950	$14,770	$14,705	$ 65	$45,245	$(740)

Comments:

Issued by Accting. Dept. ____________

FIGURE 49. Illustrative Budget Report—Branch Warehouse

THE STEPHEN COMPANY
BUDGET REPORT
FIELD SELLING EXPENSES

Month February, 1955

Salesman Austin

Territory Detroit

Description	Unit Allowance	Current Month Actual	Current Month Budget	Current Month (Over) Under Budget	Year-to-Date Actual	Year-to-Date (Over) Under Budget
Days Traveled		12	14	2	26	–
Field Selling Expenses						
Hotel	$7.50	$ 92	$ 90	$ (2)	$210	$(10)
Meals	8.00	87	96	9	216	(8)
Laundry and Valet	1.00	10	12	2	26	–
Telephone and Telegraph	.50	3	6	3	4	9
Subtotal		$192	$204	$ 12	$456	$ (9)
Travel						
Auto	.07	$ 84	$ 84	$ –	$112	$(10)
Plane		–	–		78	–
Railroad Fare		–	–		77	–
Pullman		–	–		17	–
Total Travel Expense		$ 84	$ 84	$ –	$284	$(10)
Conventions		$137	$100	$(37)	$137	$(37)
Entertainment	1.50	27	18	(9)	48	(9)
Dues and Subscriptions		5	5	–	5	–
Miscellaneous	1.00	10	12	2	12	14
Total Expense		$455	$423	$(32)	$942	$(51)
Per Cent of Net Sales		3.23	3.00	(.23)	3.14	(.14)

Comments: See Gross Profit Analysis

Issued by Budget Dept. 3/10/55

FIGURE 50. Budget Report—Field Selling Expense

analyzed by cause, i.e., as between excess units (days traveled) and excess cost per unit. The general guide as to effectiveness is the cumulative per cent of total field selling expense to net sales.

Competitive Service Activity. One other approach which has found some use in budgetary control is the competitive service type, also called the profit or loss type. The activities budgeted on such a basis are generally of a service nature wherein it is possible to compare the cost of the operation with an independent competitive price. For example, building services, or warehousing, or printing might be handled in such a manner.

The method may be outlined as follows, assuming that the operation costs are segregated and identifiable:

1. The forecasted service requirements are determined.
2. The using activities are charged for service rendered on a competitive price basis.
3. On the basis of the estimated "income," the allowable expenses are determined so as to keep them within such limits, often plus the normal "profit."
4. Such expenses are segregated on a fixed and variable basis, and the budget applied accordingly.

The measure of budget performance is reflected in the pro forma income statement, as shown in Figure 51.

THE OLESON COMPANY
TOLEDO WAREHOUSE
Comparison of Budgeted and Actual Income and Expense
For the Month of April, 1954

Description	Actual	Budget	Favorable (Unfavorable)
Net Billings to Using Activities	$106,000	$100,000	$ 6,000
Operating Expenses:			
Salaries and Wages	$ 44,500	$ 43,000	$(1,500)
Supplies	11,500	12,000	500
Repairs	16,300	20,000	3,700
Taxes	2,000	2,000	-
Depreciation	3,000	3,000	-
Total	$ 77,300	$ 80,000	$ 2,700
Operating Profit	$ 28,700	$ 20,000	$ 8,700
Statistical Data:			
Units Handled—			
Month	100,000		
Year-to-date	392,000		

FIGURE 51. Illustrative Profit Type Budget

A Budget for Operating Profit. The preceding sections have dealt largely with the *level* of distribution costs which should be budgeted, in both the absolute amounts and in relationship to net sales. Such an approach to distribution costs is important, can be beneficial, and in some of the more limited responsibility areas is the only one which may be found practical. Yet, in the final analysis, the success of an administrator is measured quite often by his *profit* record. Indeed, an increasing number of companies are using a *profit budget* for over-all control and budgeting at the higher level to supplement the usual cost budgets. Perhaps performance against a profit budget is a more significant criterion than merely measuring, for example, the budgeted selling expenses, expressed as a per cent of net sales, against the comparable actual experience. Quite often, under such measures, the selling expenses in relationship to net sales could be quite small because of high sales volume; but the operating profit to the company could be relatively unfavorable. Moreover, those men with a high ratio of field selling expense to sales might be producing a much greater profit for the business than the low-ratio men.

Therefore, an over-all *profit budget* can be an effective tool. This may be established for each territory as well as for each product, and is most effective when considered on a direct basis—the contribution of each segment to the over-all company profit.

A practical approach is to establish the over-all contribution margin needed to cover the joint expenses and operating profit. It might be determined that all territories must contribute sufficient margin to meet the following expenses and provide the indicated operating profit:

Fixed manufacturing expenses	$1,500,000
Selling expenses	500,000
Administrative expense	250,000
Operating profit	350,000
Total	$2,600,000

This margin could then be allocated among territories on the estimated sales basis. A further refinement would be apportionment taking into account the estimated product sales, through weighting the different lines with the "profit objective" established; it would then become the task of sales staff and accountant to arrive at sales volumes and product mix such as would be practical of achievement and such as would produce the necessary margin.

A Typical Procedure. The preceding sections have considered various types of budgets, and approaches to the control of distribution costs. Such reviews would precede the preparation of the annual forecast. The particular type of budget to be used in each department

THE ILLUSTRATIVE COMPANY
SALES DIVISION
TENTATIVE DISTRIBUTION COST BUDGET
1956

Department	Expense Level 1955[a]	Expense Level 1956	(Increase) or Decrease	Type of Budget	Reason for Change
General					
Sales Administration	$125,000	$129,500	$ (4,500)	Fixed.	One secretary hired, $4,800.
Market Research	17,000	30,000	(13,000)	Project.	Market studies on West Coast, $10,000.
New York Office	8,000	8,000	–	Fixed.	
Los Angeles Warehouse ...	15,000	16,500	(1,500)	Fixed and Variable.	Increase in expected tonnage.
	$165,000	$184,000	$(19,000)		
Resins					
General	$ 20,000	$ 20,000	$ –	Fixed.	
New England	60,000	57,000	3,000	Fixed and Variable, including field selling costs on a functional basis.	Change of sales emphasis, with three men added ($30,000), and increased sample expense, $7,000.
Middle Atlantic	90,000	65,000	25,000		
Midwest	120,000	195,000	(75,000)		
South Atlantic	40,000	30,000	10,000		
	$330,000	$367,000	$(37,000)		
Paints					
General	$ 10,000	$ 7,000	$ 3,000	Fixed.	One clerk added.
New York	45,000	40,000	5,000	Fixed and Variable, including field selling costs on a functional basis.	Elimination of S.A. trips.
Chicago	60,000	55,000	5,000		Reduction in office rental.
Milwaukee	30,000	30,000	–		
Detroit	79,000	99,000	(20,000)		One man added, $10,000; increased clerk's commission.
	$224,000	$231,000	$ (7,000)		
Grand Total	$719,000	$782,000	$ 63,000		
Per Cent of Net Sales	7.5	8.1			

Notes:

[a] Based on 10 months' actual, and two months' estimated.

[b] See supporting departmental schedules.

Issued by Controller's Office 12/7/55.

FIGURE 52. Comparative Budget Schedule

would be known; and many of the expense rates for variable costs would have been established. It would then become a problem of formally expressing the distribution plan or plans. In actual practice the budgeting of distribution costs in all probability would proceed simultaneously with the budgeting of sales. The two are interdependent; and any number of combinations might be reviewed before the final plans are made.

It will be assumed that a tentative sales program has been selected, although several problems are not fully resolved. The steps involved in the development of a formally expressed program would include these:

1. The budget coordinator (budget director or controller) would discuss the sales plan with the sales manager and department heads, including probable staff requirements.
2. Where applicable, information as to past experience and cost behavior would be furnished to the department heads with the objective of securing their suggestions as to budget requirements (sometimes at various sales volumes) needed to meet the sales goal.
3. Based on such data, tentative budgets would be established for each department, and in total. Included in the supporting schedules for presentation to the Budget Committee might be comparative data with previous years. One such summary is illustrated in Figure 52. This would be supplemented by detailed comparisons, department by department, and expense account by expense account.
4. In the event several alternatives were being considered, comparative data would be prepared, perhaps in income statement form. Oftentimes figures on minimum and maximum sales volumes are provided by the sales department, and statements of estimated income and expense are prepared for these levels.
5. The various relationships would be studied, based on the data presented; and distribution cost budgets and operating profit budgets, where applicable, would be approved by the Budget Committee.
6. After approval, each department head would be advised of his budget and the basis (i.e., an explanation of variable rates, etc.). The costs often will be detailed on a monthly basis, giving recognition to the variable units expected each month.
7. As the year progressed, comparisons of actual and budgeted performance would be made, corrective action taken where necessary, and revisions made in budgets when considered appropriate.

Revising the Distribution Cost Budget. A budget is a management tool and as such it should represent expected performance. It follows, therefore, that as local conditions or sales policies change, the budget should be revised to meet these changed circumstances. For example, when selling prices change, the profit budget ought to be revised. When general price levels rise, field selling expense standards should be reviewed and increased, if necessary. Those in charge of budgets should be alert to the need of revision if the tool is to be most effectively used.

Distribution Cost Budget Reports. In order to make the budget effective as a tool of control, the facts pertaining to its execution must be reported promptly to those responsible. Reports must be made to the general sales executives; minor executives such as branch, district, and department heads; functional executives such as warehouse, shipping, and advertising supervisors; and, finally, to salesmen.

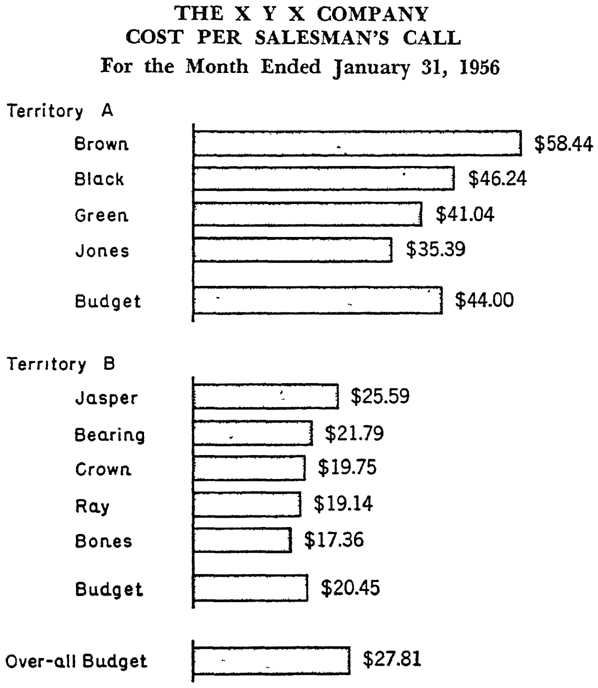

FIGURE 53. Graphic Illustration of Cost per Salesman's Call

The type of report must be designed to fit the personality of those who should use it; and this is an area where every bit of ingenuity possessed by the accountant can be put to good use. For example, graphic data often will be found effective with sales personnel. A simple bar chart is illustrated in Figure 53. In other instances, simple tabulations will suffice.

No forms of reports of general applicability can be suggested, as too much depends upon local conditions; however, the nature of the information to be included may be outlined as follows:

- For variable and semivariable cost items:
  - Cost justified by sales expectancy. (This is the original budget.)
  - Cost justified by actual sales.
  - Actual cost.
  - Variance of actual cost from that justified by actual sales.
  - Analysis of causes and responsibility for variances.
  - Unit cost comparisons of actual and budget.
- For fixed items:
  - Cost appropriation.
  - Actual cost.
  - Variance of actual cost from original or revised appropriation.
  - Analysis of causes and responsibility for variances.

To the extent applicable such information must be reported for individual products, territories, branches, departments, and salesmen. The information may be supplied for the current month, the year to date. or both. Comparisons of actual expense and relationships may be shown for previous periods or the same period of the previous year. Whatever the form of the reports, the information contained therein must motivate prompt corrective action.

Other Control Applications. The information developed in connection with standards and budgets can be fruitfully used if those who study the activities are alert to make the most of the opportunity. Many such applications will be the result of special utilization of the information. Functional costs might be of assistance in determining the minimum order which should be accepted: For example, suppose a review indicates the following minimum cost of handling an order (based on the minimum functional units).

Function	Cost per Order
Order Taking	$3.25
Packing and Shipping	2.16
Delivery	.45
Clerical—Bookkeeping	.15
Credits and Collections	.08
Subtotal	$6.09
General Overhead	.22
Total	$6.31

If the average gross margin is 30%, then the loss on an assumed $1.00 order is $6.01 ($6.31 minus $.30). If the salesman's call were eliminated, i.e., assuming a phone or mail order at \$.15, the loss might be \$2.91 [\$6.31—(\$3.25—\$.15) = \$3.21 order cost, less \$.30 gross = \$2.91]. It would appear that the minimum order that could be profitable would be \$21.03 (\$6.31 ÷ 30%). However, as certain costs might vary with sales volume this factor would have to be considered.

This is but one illustration. Practical uses of analytical data in intelligent sales direction are many.

Summary. Budgets and standards can be effective tools in the direction and control of sales effort. But, as is always the case, these techniques must be intelligently applied. The emphasis in the less tangible and standardized areas should be on securing the maximum effort and not in squeezing costs lower. Here, as in most areas, the budgets and standards are only guides. There is no substitute for dynamic and aggressive sales leadership.

Chapter 19

ADVERTISING BUDGET

Reasons for Separate Consideration. Advertising is a form of sales promotional effort and as such is an integral part of the cost of distribution. The advertising program must be coordinated with that of sales and other distribution effort. In actual practice, however, it is often convenient to develop the advertising budget separately, for the reasons that:

1. Advertising may be of sufficient importance as to constitute a major financial item.
2. The administration of the advertising program is frequently vested in a separate department or an outside agency.
3. The advertising program is considered in some concerns to have a less immediate and direct relation to the sales program than do other elements of the selling cost. This is particularly true where the advertising expenditure is directed to long-run rather than immediate sales results. Such situations allow a considerable degree of flexibility in advertising expenditures.

Special Advertising Problems. It is a singular fact that, while it is more difficult intelligently to budget advertising cost than perhaps any other important element of distribution cost, yet the budget method was applied to advertising earlier than to other costs. This anomalous situation arose from the fact that early advertising budgets were frequently merely "lump-sum" appropriations which served as maximum limits of expenditure. Little intensive study was directed to the problem as to just how much advertising should be done—when, where, and how—in order to realize the greatest benefit. The answer to these questions can never be secured with absolute certainty. Too much depends upon such factors as future business conditions, competition, new developments in markets and products, and finally the effectiveness of the advertising itself, to permit of exact answers. A large element of judgment will always be necessary. Yet, much analysis of value can be made. While some of these factors are obviously uncontrollable, their past movements can be studied, their relationships and effects noted, and their importance weighed to a degree that will provide at least some basis for intelligent decisions as to advertising expenditures.

There is probably no one single item of business cost in which there is greater waste than in advertising. This does not signify that too much is spent for advertising, but rather that the amounts spent are subjected to less rigid tests of probable relation of cost and result than are most cost items. The authors have sat in executive conferences where lengthy and heated discussions waged over the desirability of adding a few salesmen at a cost of ten or fifteen thousand dollars a year and then have seen the same executives approve an advertising appropriation of many times that amount merely by noting the fact that it represented some *reasonable* increase over the expenditure of the previous year. No justification for the increase was presented or called for. The impression seemed to exist that the advertising expenditure represented some imponderable element entirely beyond the pale of analytical test. While such an attitude is no longer general among executives, it is still true that advertising expenditures are subjected to less critical tests than most cost items.

It is extremely difficult to generalize upon the methods which should be employed in the budgeting of advertising costs, due to the wide variety of circumstances existing in different concerns. For example:

1. Some concerns do not have an advertising department within their own organization, but place all responsibility for advertising with a professional agency. Some concerns depend entirely upon their own advertising departments. Still other companies maintain their own departments which function in cooperation with an advertising agency.
2. In some concerns the advertising manager reports to the sales manager, whereby sales and advertising programs are closely correlated; in others the advertising manager is independent and coordination is effected either by conferences or through the chief executive.
3. In some concerns the advertising is largely of an institutional nature; in others it is directed mainly to immediate sales projects.
4. In some concerns advertising is chiefly local, as with the typical department store; in others it is national in scope, as with the manufacturers of automobiles.
5. In some manufacturing concerns expenditures are made directly by the manufacturer; in others the manufacturer contributes to the advertising of jobbers and dealers.
6. In some instances it is comparatively easy to identify the advertis-

ing costs with individual products and territories; in others no such definite identification is possible.

7. Finally, a great variety of different media and combinations of media are employed as, for example, newspapers, periodicals, direct mail, outdoor advertising, radio, television, etc.

Steps in Development of Advertising Program. There are, however, some basic steps in the planning and control of advertising costs which are applicable to all concerns. Among these should be noted particularly the following:

1. The purpose or objectives of the advertising program should be clearly defined. This should extend to both immediate and ultimate objectives.
2. An intensive study should be made of the probable cost and appropriations necessary to accomplish the objectives.
3. A detailed program should be constructed showing when, where, how, and for what the advertising expenditures are to be made. Lump-sum appropriations should be avoided except as a summarization of properly classified items.
4. The advertising costs should be closely coordinated with other selling costs and with the sales, production, and financial program generally.
5. The advertising cost should be analyzed in such manner as to reveal the cost applicable to individual media, projects, territories, products, customer groups, etc. Moreover, the analysis should reveal, in so far as possible, individual responsibility.
6. Standards should be established for the control of the advertising costs.

Purpose of Advertising. Advertising is a form of selling effort the ultimate purpose of which is to assist in selling goods; but the nature of the advertising effort and the direction which it may take in the accomplishment of this ultimate purpose vary considerably with the circumstances. Directly, the objectives may be such as the following:

1. To increase immediate sales.
2. To maintain prices.
3. To reduce the cost of other selling effort.
4. To educate consumers in the use of products or services or in particular policies.
5. To establish and maintain trade marks and brands.
6. To establish new products in the market.

7. To develop new markets.
8. To meet competition.
9. To establish in the minds of consumers a favorable attitude toward, and confidence in, the concern and its products and policies.
10. To create favorable public opinion and prevent hostile legislation.

It is obvious that there is a certain overlapping in these objectives; however, they assume individuality when applied to concrete cases. The more definitely a concern can define the objectives of its advertising effort, the more intelligently can its advertising program be formulated, its effort controlled, and its results measured.

Determining the Necessary Appropriation. Once the objectives of the advertising program are clearly defined and their relative importance weighed by the executive group, estimates must be made as to the amounts necessary for their accomplishment.

There are two general methods in use in determining the amount of the advertising budget. The *first* plan is to make a lump-sum appropriation based upon some such factor as a percentage of previous or budgeted sales. The total appropriation is then split up by the advertising department, or outside agency, and applied to individual projects. The *second* plan is to examine carefully the objectives of the advertising program, the probable cost of reaching the objectives; and, from this detailed analysis, to arrive at a total amount required.

To the extent that the advertising is done for immediate results, the sales budget must serve as the basis. The advertising executives, with such outside counsel as may be employed, must estimate the cost of the advertising necessary to produce the sales budgeted. It is never possible, even under the most favorable circumstances, to tell exactly the amount of advertising necessary to produce a given sales volume; but, with adequate records of past experience properly analyzed as to cost and results, reasonably close estimates can be made. Department stores and mail order houses are illustrative of the type of concerns in which much of the advertising expenditure is directed to immediate results.

To the extent that the advertising is directed to less immediate results, such as the creation of goodwill, establishment of brands, development of new markets, etc., the amounts to be appropriated must be based upon such factors as:

1. *The amount of funds that can be released in any one year.* No matter how attractive the advertising program may appear, it must first be tested by its effect upon the financial position of the company.
2. *Amount necessary to make the program effective.* Small expendi-

tures are sometimes sheer waste, whereas larger expenditures may accomplish desired results.

3. *The general program of future expansion.* Where advertising is largely of an institutional nature, the amount to be expended depends upon the rate of expansion contemplated.

Lump-Sum Appropriations. Under the plan of making lump-sum appropriations, the total advertising budget may be determined as follows:

1. A percentage of the previous year's sales or an average of several years' sales.
2. A percentage of budgeted sales.
3. A fixed amount per unit of product.
4. An amount comparable to or determined by the appropriation of competitors.
5. An arbitrary increase or decrease over the past year's expenditure.
6. A percentage of the net profit of the previous year.

Where the advertising appropriation is based upon a percentage of sales, it is quite generally agreed that budgeted sales should be used in preference to sales of the previous year. This at least gives some consideration to changes in sales policies and the expected trend in general business conditions. The percentage used is frequently based on the average of the industry. There are certain advantages to the plan of basing the advertising appropriation on a percentage of budgeted sales. The plan is simple and easily understood by the executive group generally. It automatically controls the advertising expenditure in relation to planned dollar volume. Where a great variety of goods are sold, and where much of the advertising represents joint cost, it is difficult to make appropriations for individual products. With well-established lines, reasonably stable conditions, and considerable past experience as a guide, the results are likely to be similar to that secured by more intensive analysis. On the other hand, the plan is basically weak, in that it does not require a critical analysis of definite objectives and the probable cost to attain them. In most concerns the sales program is constantly shifting; new ventures, new projects, new products must be considered; shifts are being made in the emphasis on various types of sales effort. Simply to perpetuate a plan of allotting a percentage of budgeted sales to advertising may result in disproportionate and misdirected sales effort. Such a plan tends to set a *maximum* rather than a *proper* allowance for advertising.

A modification of this plan is to use a different percentage for the budgeted sales of each class of goods. This method is used to a considerable extent by department and other retail stores. For example, a large furniture store uses a much higher percentage for living room suites than for kitchen specialties.

Some concerns manufacturing or selling a uniform product or only a few products appropriate a given amount of advertising per unit. The plan is used particularly by the manufacturers of specialty goods such as electric sweepers, washing machines, automobiles and the like. A certain brewery, for example, uses 40 cents per barrel. Exceptions are made when new territory is being developed. Where this plan is used, the appropriation should be based on budgeted unit sales.

This plan lends itself particularly to vertical cooperative advertising. Thus, the manufacturer may appropriate a dollar in advertising for each dollar required of the distributor. The plan, being based on budgeted units, is simple and easily applied. Moreover, it is expressive of at least some relationship between the advertising appropriation and the specific task to be performed. Where there is sufficient past experience to base intelligent judgment on the expenditure necessary to sell the product, this is usually the most satisfactory method for concerns of the type mentioned.

One of the most difficult factors to contend with in setting the advertising appropriation is the action of competitors. Some smaller concerns use the plan of following the leader, on the theory that it may benefit by the more extensive research and study of the large competitor. Concerns of comparable strength may attempt to match the appropriations of their leading rivals, or even to out-advertise them, on the theory that they cannot afford to do otherwise. When this becomes the governing factor in determining appropriations, it is obviously poor marketing strategy. Somewhere the increased advertising meets the law of diminishing returns. Moreover, there are other types of selling effort which must be considered. Company X may increase its advertising appropriations from $1,000,000 to $1,500,000 but its rival, Company Y, may show greater earnings by appropriating an extra $500,000 for other types of selling effort or product research; or even by limiting its total sales effort to previous amounts.

There is no denying the fact that advertising appropriations must give some effect to the actions of competitors, but such influence should not be the governing factor. An intensive study of advertising objectives, their relative importance, and their cost-result relationship should ultimately govern the appropriation.

The plans of making an arbitrary increase or decrease in the appropriation over the previous year or of appropriating a percentage of the previous year's profit have little to commend them. They are based upon the assumption that there is no intelligent basis for determining what amount of advertising effort will contribute most to the long-run profit and consequently the matter should be determined by such considerations as expected trends in general business, financial position, dividend policy, tax savings, etc. This policy is more often used in concerns where there is little direct or immediate effect of advertising upon sales volume. While this policy is still followed by some large and successful concerns, its adherents are becoming fewer.

With regard to the effect of general business conditions on the advertising appropriation, some consideration, of course, should be given to shifting the emphasis as between luxuries, usual convenience goods, and necessities. The general opinion is that luxuries should be emphasized in good times; necessities, in bad times; and that usual convenience goods should have the same emphasis at all times.

Appropriation Based Upon Detailed Study. The second general plan of developing an advertising program is to examine carefully the objectives, the detailed methods by which such objectives can be accomplished, and the costs which will be involved. These individual costs are then combined into a total appropriation. This plan involves such detailed considerations as:

1. Necessary marketing and advertising research.
2. Selection of individual advertising projects relative to products and territories.
3. Selection of detailed advertising methods and media.
4. Detailed estimates of direct and indirect costs.
5. Detailed analysis of time when expenditures will be made, that is, in what month or quarter.
6. Research as to effectiveness of methods.

It is beyond the scope of this book to consider these detailed steps; this is a specialized task for those trained and experienced in the field of advertising. It must be performed by either the company's own advertising staff, by outside advertising agencies, or both. It should be made clear, however, that the advertising departments should not be given a carte blanche appropriation to do with as they please and without reckoning. They should be required to justify their program before the money is appropriated and spent. This can be done by requiring them clearly to define their objectives, to outline the exact methods by which they plan to attain them, and to estimate the cost of each element of the program. In brief, they should be compelled to justify their program before, rather than after, the money is spent, with an understanding that they will be held accountable for the results as planned.

Setting Forth the Detailed Program. Once the detailed program is developed, it should be given definite form in writing. This has the following advantages:

1. The advertising department (or agency) is placed on record as to what they propose to accomplish and at what cost.
2. The expenditures are timed and can thus be provided for in the financial budget.
3. The detailed program, once approved, will serve as a basis for definite control over expenditures.
4. Various department heads will know in advance the nature and extent of the advertising assistance they are to receive and when it will be given.

The timing of the advertising expenditures is especially significant. In some instances, as in the promotion of new products, or in the development of new markets or territories, the plans may extend, at least tentatively, for several years in advance. In well-established markets the program is usually for the fiscal year with a breakdown by months or quarters.

Coordination of the Advertising Program. Advertising is only one of numerous types of selling effort. It should be timed and coordinated with other sales effort to form the most effective results. The entire program of sales effort should then, in turn, be coordinated with the sales, production, and finance programs generally. Elementary as this statement may appear, the lack of such coordination is one of the chief sources of waste in advertising expenditures.

It is frequently desirable to hold a part of the advertising appropriation in reserve to meet unexpected circumstances. This permits the use of special effort where the regular program has failed in its effectiveness or where a sudden change in conditions has altered the sales program. Many such changes arise as a result of unexpected moves on the part of competitors, introduction of new products, or quick changes in general business conditions.

Analysis of Advertising Costs. As a foundation for both budgeting and control, the advertising costs must be properly analyzed. The objectives of such analysis are the determination of the cost of specific advertising projects, the cost in individual territories, the cost of particular products or product groups, the cost related to individual customer groups, etc.

To make such analyses, the cost must first be resolved into their direct and indirect elements as pertains to the particular analysis at hand. For example, a concern which extends its advertising effort over a wide area may find it necessary to make a territorial analysis. Direct costs of territories would include:

1. Salaries and expense of advertising executives and supervisors within the individual territories.
2. Clerical salaries and office expense of territorial advertising offices.
3. Salaries and expense of demonstrators.
4. Local newspaper space.
5. Outdoor advertising space (billboards, signs, etc.).
6. Advertising allowances to customers.
7. Local contest expenses.
8. Local contributions.
9. Property insurance and taxes on advertising equipment and facilities within individual territories.
10. Insurance and taxes on territorial direct advertising payroll.
11. Communication, supplies, and general expense of territorial advertising offices.

Indirect territorial costs would consist of:

1. Advertising administration and overhead such as advertising executives' salaries.
2. Cost of copy preparation such as copy writing and art work (where copy is widely used).
3. Cost of physical production such as printing of catalogs, circulars, etc. (where used in several territories).
4. Direct cost of advertising media of general coverage such as radio time, magazine space, etc.

Such indirect costs must be further resolved into individual medium costs and each medium cost then distributed to individual territories. Thus the direct, indirect, and total advertising cost of each territory is ascertained.[1]

Application of Standards for Advertising Costs. Advertising and sales promotional activity is the most difficult of all elements of distribution effort to measure in terms of cost standards. For some advertising and sales promotional activities, accurate and immediate cost standards can be applied; but for others, the cost measurement must be very general in nature and applied to periods of considerable length of time. A manufacturer selling neckties exclusively by direct mail will be able currently to measure its advertising performance with reasonable accuracy by applying a standard cost per unit of product sold, particularly if different standards are established for different territories and seasons. But even here a varying cost per unit sold will reflect changes in general market conditions as well as the factor of advertising performance. When it comes to the establishment and maintenance of trade names, brand consciousness, dealer and customer goodwill, only general long-run cost measurements can be used. Since the advertising and sales promotional expense of most concerns is relatively large, every possible cost standard which will serve to guide management in the intelligent direction of the effort and measurement of performance must be applied, whether of an immediate or long-run nature.

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[1] For a complete statement and illustrations of the method of analyzing advertising costs the reader is referred to *Distribution Costs* (2d ed.), by J. Brooks Heckert and Robert B. Miner (New York: The Ronald Press Co., 1953) Chs. 4-9.

For control purposes the advertising costs should be classified as to:

1. Advertising administration and overhead.
2. Preparation of advertising copy.
3. Physical production of advertising material.
4. Direct media costs.
5. Miscellaneous.

Cost Standards for Advertising Overhead. Administration and overhead cost as a whole may be measured by such standards as:

1. Cost per dollar of all direct advertising and sales promotional cost.
2. Cost per unit of principal medium used; e.g., direct mail piece, newspaper inch (where advertising is restricted chiefly to one medium).

The standards may pertain to the advertising administration and overhead as a whole or to those parts of the overhead which pertain to copy preparation, physical production, direct media, or miscellaneous advertising activity. Thus different cost measurements may be applied as follows:

Administration and Overhead Costs Pertaining to	*Cost Measurements*
Preparation of advertising copy.	Cost per copy unit prepared. Cost per labor hour. Cost per dollar expended for copy preparation.
Physical production of advertising material.	Cost per direct labor hour. Cost per physical unit.
Direct media supervision.	Cost per medium unit. Cost per direct medium dollar.
Miscellaneous.	Cost per dollar expended for miscellaneous advertising and sales promotion.

Cost Standards for Copy Preparation. The preparation of advertising copy, including the overhead pertaining thereto, may be measured by such standards as the cost per copy unit; for example, catalog page, newspaper inch, etc. Such standards are obviously quantity measurements only and give no effect to quality of output. This must be subjected to the judgment of executives and its effectiveness measured in the long run by sales results.

Cost Standards for Physical Production of Advertising Material. The physical production of advertising material, such as printing, and the construction of signs, dealer helps, etc., present no particular difficulties. These costs can be measured by standard unit production operations the same as all production costs.

Cost Standards for Advertising Media. Ultimately all of the advertising costs, except certain miscellaneous items, should be resolved into individual advertising and sales promotional medium costs. Each medium cost should consist of its advertising copy, its physical production, its direct cost, and its share of the overhead, in so far as these are applicable. Cost standards should then be selected for each medium.

The ideal procedure is to apply both cost and result standards. Thus, in direct mail advertising, the standard cost of preparing and mailing a certain type of circular may be $100 per 1,000 pieces; the standard measurement of results expected may be 50 units sold per 1,000 circulars mailed, or $1,000 of sales per 1,000 circulars mailed. Such definite standards can usually be applied currently to individual media costs but seldom to the results. Both types of standards should be applied, however, in so far as practicable. Result standards must frequently apply to longer periods of time.

Advertising and sales promotional media and illustrative standards applicable are as follows:

Media	*Standards*
Publications of general and national circulation.	Total cost per unit of space. Cost per inquiry received (e.g., when identification coupons are used). Cost per unit of product sold or per dollar of sales when identifiable.
Special publications directed to particular groups, such as business, trade, farm, industrial, technical, professional, religious, class, etc.	Total cost per unit of space. Cost per inquiry received. Cost per unit of product sold or per dollar of sales to corresponding groups.

Media	*Standards*
Miscellaneous publications, including directories, theater programs, house organs, etc.	Total cost per unit of space. Cost per inquiry received.
Newspapers.	Total cost per unit of space. Cost per sales transaction (particularly in department and local retail stores). Cost per dollar of net or gross sales (where this is the chief medium used).
Direct mail, including circulars, booklets, folders, letters, calendars.	Total cost per unit mailed for each type of direct mail piece used. Cost per dollar of gross or net direct mail sales. Cost per inquiry received.
Catalogs.	Total cost per page or standard space unit. Cost per dollar of gross or net catalog sales when identifiable.
Outdoor advertising, including billboards, signs, street cards, railroad cards, advertising on trucks.	Total cost per outdoor unit for each type used.
Radio.	Total cost per unit of time factored by reported or tested coverage. Cost per dollar of net sales of featured items.
Store and window displays.	Total cost per unit distributed of store and window cards and displays. Total cost per day of window trimming and display.
Dealer helps, including dealer advertising, sales assistance, and management aid.	Total cost per account sold.
Sample distribution.	Total cost per sample distributed.
Demonstrations.	Total cost per demonstration.
Advertising allowance to dealers.	Cost per dollar of net sales.

Miscellaneous Advertising and Sales Promotional Costs. Most concerns have certain advertising and sales promotional expenditures of a miscellaneous nature which cannot be classified with the regular media costs and for which cost standards are not available. The cost control here must be left to the direct supervision of executives. Illustrative of such miscellaneous items are:

Special exhibits.
Contests.
Public service of employees.
Motion pictures of an educational nature.
Stockholders' letters and dividend inserts.
Contributions.
Community welfare.
Pure research.

Cost Standards for Total Advertising and Sales Promotional Effort. The advertising and sales promotional effort as a whole may be measured by such result standards as:

Cost per dollar of net sales.
Cost per unit of product sold.
Cost per prospect secured.
Cost per sales transaction.

Such standards are very general measures of the results secured from the general advertising and sales promotional cost. Over long-run periods they are valuable and, in some instances, the only measurements possible.

Accounting Control of Advertising Costs. Effective advertising depends, among other things, upon skillful planning; and it is in this phase that the first contribution of the accountant can be made. To be sure, he cannot and should not decide whether a given medium should be used, or whether the company should advertise in a certain magazine—that is a decision for the advertising executive. However, he must raise questions of "why" and "how." Thus, if in a cooperative attitude the accountant can review the advertising budget before it is presented for approval, he can assist the advertising manager. By analytical questions, such as whether the program is directed to those cities or products which offer the most profit, he can bring up points for consideration. Comparisons of estimated cost with expected additional profit should be useful and can be provided in support of the program. If the advertising executive can answer the analytical questions raised by the accountant, he can be that much better prepared for the interrogation by the chief executive or board of directors.

In addition to this review of plans *before* expenditures or commitments are made, useful information can be provided as to the status of individual advertising projects. An illustrative monthly report is shown in Figure 54. Supporting these project costs may be a tabulated listing of the detailed invoices and requisitions.

Besides the reporting of costs by project, useful comparisons with standard can be made. Moreover, occasional tests of the effectiveness of a program—such as determination of additional sales or operating profit—would represent areas where the accountant's analytical skills can be put to good use.

THE ILLUSTRATIVE COMPANY
ADVERTISING AND SALES PROMOTION
EXPENDITURES AND COMMITMENTS
As of January 31, 1956

		Expenditures and Commitments			
	Project Budget	Actual Expenditures to 1/31/56	Outstanding Commitments	Total	Balance Available for Use or Transfer
Publication Advertising					
U. S. News—3/15/55	$ 10,000	$ 3,000	$ 4,000	$ 7,000	$ 3,000
Fortune—3/56	40,000	–	30,000	30,000	10,000
Business Week—2/10/56	10,000	5,000	2,000	7,000	3,000
Unallocated	60,000	–	–	–	60,000
Total	$120,000	$ 8,000	$36,000	$44,000	$ 76,000
Catalogs and Booklets					
Parts Catalog	$ 10,000	$ 7,000	$ 3,200	$10,200	$ (200)
Flying Notes	5,000	–	–	–	5,000
Ride in the Sky	20,000	2,000	3,000	5,000	15,000
Total	$ 35,000	$ 9,000	$ 6,200	$15,200	$ 19,800
Displays and Exhibits					
National Aircraft Exhibit	$ 12,500	$ –	$ –	$ –	$ 12,500
Flying Farmers Show	2,500	2,200	200	2,400	100
National Aircraft Show	20,000	–	4,000	4,000	16,000
Unallocated	5,000	–	–	–	5,000
Total	$ 40,000	$ 2,200	$ 4,200	$ 6,400	$ 33,600
Sales Promotion					
Radio Project	$ 10,000	$ 800	$ 2,800	$ 3,600	$ 6,400
Television Project	25,000	2,000	4,000	6,000	19,000
Ignition Project	40,000	1,000	16,000	17,000	23,000
Unallocated	–	–	–	–	–
Total	$ 75,000	$ 3,800	$22,800	$26,600	$ 48,400
Advertising Administration					
Applied Through Current Month	$ 2,000	$ 2,000	$ –	$ 2,000	$ –
Unallocated	23,000	–	–	–	23,000
Total	$ 25,000	$ 2,000	$ –	$ 2,000	$ 23,000
Total Advertising and Sales Promotion Expense	$295,000	$25,000	$69,200	$94,200	$200,800

Figure 54. Expenditures and Commitments for Advertising and Sales Promotion Expense

Chapter 20

BUDGET FOR RESEARCH AND DEVELOPMENT COSTS

Definition and Importance of Research and Development. As the term is employed in this chapter, research is considered in the more restricted meaning as related to the natural sciences. It may be defined as the inquiry into the scientific fields of chemistry, physics, electronics, biology and similar subjects. Research is the activity in the laboratory which seeks to discover new or improved processes or products. Development, as here used, is one step removed from research. It denotes the functions carried on to *commercially* utilize the results of the research laboratory. Responsibility for *both* of these activities in the industrial organization typically is placed with the vice president or director of research and development.

It was not too many years ago that industrial research was done in some musty corner of a factory and little money was spent on it. Today, however, the picture has changed, and many millions of dollars are consumed by this activity. Under our competitive economy industrial firms grow and prosper by inventing or developing new products, by improving existing products, or by improving the production processes. It is simply not enough to do reasonably well that which is now being done. Improvement is the characteristic which differentiates the progressive firm from the one on the road of decline. Thus it can be seen that the very existence of a business may depend on research and development.

In a very real sense the cost of research is an investment in the long-term growth of the business. To use another comparison, the moneys spent on research and development, in contrast to many expenditures, may be likened to insurance policy premiums—payments for the protection of the assets of the business. Some costs may be likened to short-term premiums, whereas others may provide protection over many years. This characteristic of research and development activities must be considered in the budgeting and control of this phase of business.

Organization for Research and Development. Because effective budgetary control depends upon sound organization and responsibility accounting, it is perhaps well to describe the major activities usually composing the research and development function.

Very often the director of research and development reports to the president of the company. Under his supervision may be found four basic but related fields of activity:

1. Research.
2. Patents.
3. Product and process engineering.
4. Development.

The activities of these four fields must be coordinated if the business is to accomplish its objective of discovering and utilizing new products and processes. First, the specific idea must be conceived; and this is the fundamental purpose of research—to find new products or processes or to improve existing ones. The research group conducts laboratory or small-scale experiments to secure the basic method or product on which the other groups will work. Also, the research division may advise the other three divisions on technical problems.

The patent division obtains all patents on company inventions, reviews patent data and literature, etc., and either conducts or assists the legal department in conducting all patent litigation. As the work of the other research and development activities results in patentable ideas, it is obviously important for a company to protect these rights. Hence, detailed and careful studies must be undertaken to secure sound patents. Perhaps it is well to inject here the thought that reduced costs achieved through less thorough patent searching and less careful wording of patents can prove to be a foolish economy.

Once an idea or product or process has reached the stage where serious consideration is to be given either to pilot plant or to large-scale operations, it becomes a project of the engineering division. Generally, this division operates the pilot plant and secures the necessary data for an evaluation of large-scale operation. Likewise, it will specify the types of equipment and processes necessary in commercial production. Finally, the development division enters the picture. This division studies the market in an effort to determine present and potential demand for the product, as well as supply, so as to assist in determining the size of commercial facilities. The development division may also distribute samples to the field. When commercial production is started, it may assist the salesmen until the product is well established and final responsibility for sales is transferred to the sales department.

The exact type of organization depends, of course, on the size of the operation. In many small concerns these functions are not departmentalized. On the other hand, in some large companies the quality control function may be added as another activity under the director of research.

A General Procedure for Budgetary Control. The same budgetary control principles, as well as other accounting control principles, used by effective managements in controlling manufacturing and distribution costs can be used also in controlling expenditures for research and development. Fundamentally, the technique involves three general functions:

1. Effective direction of the research and development activity through intelligent planning and evaluation of the various *projects* which are brought up for consideration.
2. Keeping of actual expenditures within the budget limitations.
3. Measurement of actual performance against standards in certain functional areas.

In constructing a budget and in assisting the Director of Research and Development in the control of costs, the following steps are indicative of the sequence which will be found necessary by the budget director:

1. Establishment of proper expense classifications, segregated on a responsibility basis to meet the needs of the research staff.
2. Determination of *total* amount to be spent on research and development.
3. Establishment of departmental budgets.
4. Establishment of individual projects and budgets.
5. Periodic reporting on expenditures.
6. Establishment and application of functional standards.
7. Over-all testing of research effectiveness.

The Expense Classifications. Research and development costs cover a variety of expenses. The most significant cost is usually represented by the payrolls including the related costs such as social security taxes, workmen's compensation insurance, group life, health and accident insurance, and pensions. The second major category consists of materials and supplies needed in the laboratory—expendable equipment, operating supplies, chemicals. Finally there are the other operating expenses: traveling expenses, consultants' fees, telephone and telegraph, depreciation, laundry, dues and subscriptions. In a small or medium-sized laboratory, this threefold grouping might be sufficient for budget purposes. Usually, however, a more detailed classification is found desirable. Illustrative is this breakdown:

1. Salaries and Wages
   a) Salaries of the administrative staff, including department managers.
   b) Salaries of the nonadministrative professionally trained staff.
   c) Salaries and wages of the nonprofessional, technical staff—laboratory technicians, draftsmen.
   d) Clerical salaries—the clerks, stenographers and secretaries.
   e) Hourly labor—plant labor used in the laboratory for running equipment, clean-up, etc.
2. Materials and Supplies
   a) Expendable equipment, such as specially designed machines for use on a single project, which do not become part of the basic equipment.
   b) Chemicals and drugs.
   c) Other laboratory supplies.
   d) Repair materials.
3. Other Direct Expenses
   a) Payroll taxes and insurance.
   b) Traveling expense.
   c) Consulting fees.
   d) Periodicals and other literature.
   e) Dues and memberships.
   f) Depreciation.
   g) Property taxes and insurance.
   h) Light, heat, and power.
   i) Laundry.
   j) Miscellaneous.

These classifications are illustrated in the budget report shown in Figure 55, which is one manner of presenting the budget of the research division. In any event, the principle to follow is the segregation of important expenses in that manner considered to be most useful by those who must control the costs.

Expenditures of a capital nature are considered in Chapter 22.

Determination of Total Budget. A basic decision to be made periodically is the *total* amount of the research and development budget. Somewhat the same considerations may govern the limit to be placed on the over-all research budget as applied in establishing the advertising budget:

1. *The financial position of the company.* No matter how worthy the research objectives, the company must be in a position to make the funds available.

THE ILLUSTRATIVE COMPANY
RESEARCH AND DEVELOPMENT DIVISION
Budget for Year Ending December 31, 1956

	Quarter				
Description	1	2	3	4	Total
CONTROLLABLE					
Payroll:					
Administrative	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 200,000
Technical	125,000	140,000	160,000	200,000	625,000
Nontechnical	75,000	90,000	100,000	100,000	365,000
Clerical	10,000	10,000	10,000	10,000	40,000
Plant labor	12,500	15,000	17,000	20,000	64,500
Subtotal	$272,500	$305,000	$337,000	$380,000	$1,294,500
Materials and Supplies:					
Chemicals and drugs	$ 35,000	$ 40,000	$ 45,000	$ 50,000	$ 170,000
Expendable equipment	15,000	20,000	20,000	20,000	75,000
Laboratory supplies	12,000	15,000	15,000	15,000	57,000
Repair materials	3,000	5,000	5,000	8,000	21,000
Subtotal	$ 65,000	$ 80,000	$ 85,000	$ 93,000	$ 323,000
Other:					
Consultants' fees	$ 10,000	$ 30,000	$ –	$ 20,000	$ 60,000
Traveling expense	15,000	15,000	15,000	15,000	60,000
Dues and subscriptions	5,000	5,000	5,000	5,000	20,000
Payroll taxes and insurance	27,500	30,500	33,700	38,000	129,700
Laundry	2,000	2,000	2,000	2,000	8,000
Light, heat, and power	5,000	5,000	5,000	5,000	20,000
Miscellaneous	5,000	5,000	5,000	5,000	20,000
Subtotal	$ 69,500	$ 92,500	$ 65,700	$ 90,000	$ 317,700
Total Controllable	$407,000	$477,500	$487,700	$563,000	$1,935,200
NONCONTROLLABLE					
Depreciation, taxes, and insurance	20,000	20,000	20,000	20,000	80,000
Grand Total	$427,000	$497,500	$507,700	$583,000	$2,015,200

FIGURE 55. Annual Budget—Research and Development Division

2. *The amount necessary to make the program effective.* To spend too little may not permit attainment of the desired results.
3. *The expansion program.* The future growth plans of the company will influence both the nature and extent of the research program.
4. *Competitive activity.* Action of the principal competitors usually will be considered in reviewing any research plans.
5. *General economic outlook.* The future prospects, tax burden, and similar factors must be weighed.

With these general considerations in mind, management may select any one of several guideposts to measure the *total* budget:

1. A percentage of estimated sales for the next year, or perhaps an average of the next several years.
2. A percentage of operating profit before research and development expense.
3. A percentage of net profit.
4. The expenditures of the preceding year, perhaps adjusted by a flat percentage.
5. A fixed amount per unit of product sold or estimated to be sold.

An Operating Budget. The establishment of an over-all budget merely sets total limits of expenditures, but does not serve as a guide in planning research efforts. Such direction is provided by the project budgets. The project budgets in turn may govern or determine the allocation of the total budget by type of expenditure. Thus, if projects are undertaken wherein raw materials are relatively expensive, this might result in a corresponding reduction in budgeted salaries and wages.

Project budgets ordinarily will be established after an evaluation of the work to be done. In this process recognition should be given to the various major groupings of research and development activity; and the segregation of total costs budgeted and expended in each category will have considerable significance. Some illustrative major classifications are as follows:

1. Pure or fundamental research (with no immediate commercial value in sight).
2. Sales service—projects requested and originated by the sales department.
3. Factory service—those projects requested by the factory.
4. New product research—on items not in existing lines.
5. Product improvement—improvement in the quality and appearance, etc., of present products.

The budget and actual costs of projects classified in this manner are illustrated in Figure 57. It lets management know, for example, the cost of giving research service to the sales department. A disproportionate amount of time or costs accumulated on this type of activity would signal the need for a critical review of the requests.

Establishing the Projects. The selection of the particular projects to be undertaken during the coming year, or other budget period, is usually first the responsibility of the research director. He probably would meet with his staff and discuss individual ideas proposed for the future program. Several factors would govern the selection, among which might be:

1. Anticipated economic gains.
2. Availability of qualified personnel.
3. Prior research by others—either within or without the organization.
4. Time required for the research.
5. Relative importance of the subject in relation to present or future plans.

The proposed program would be subjected to critical review before approval.

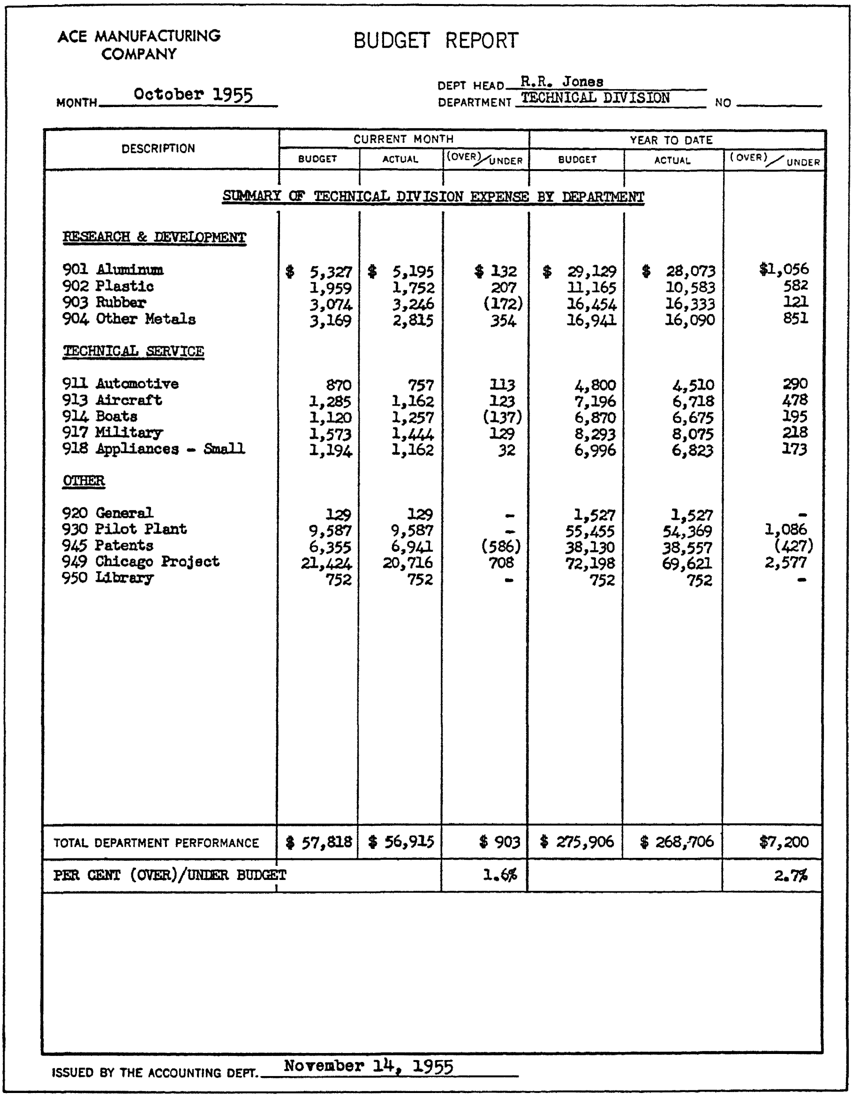
The determination of the amount to be spent on each project can be handled in several ways. One of the least satisfactory is to more or less arbitrarily allocate to each project an amount such that the total agrees with the appropriation or over-all budget. A better method might involve these steps:

a) Determine the amount needed to complete the projects already in process.
b) Determine the probable costs of the service department activities, such as library, drafting room, testing laboratory, clerical pool, and general overhead.
c) Deduct (*a*) and (*b*) from the total to arrive at amount available for the direct costs of new projects.
d) Decide how much can be planned in each of the major categories described on page 291.
e) On the basis of allowable group expenses, determine the amount to be spent on each proposed project, with a given amount retained for "unallocated" projects. Planning each project would include an estimation of the total man-hours needed.

It is the opinion of the authors that a preferred procedure is to require the research director to indicate in considerable detail his wants and why he needs the funds. Much of the detail work in determining the estimated project costs can be handled with the assistance of the accounting or budget department. The total of the project budgets, including service department costs, must, of course, not exceed the over-all budget. Requiring adequate supporting evidence usually results in more study being given to the best means of accomplishing the objective. Moreover, the economic justification can be given full consideration.

Once projects are authorized, periodic reviews must be made to determine the feasibility of their continuance.

Departmental Budgets. Once the project budgets are established, the crew requirements of each department can be known, with the result that the departmental budgets can be finalized. Moreover, the over-all budget as to type of expense can be determined. A budget by departments, and compared with actual, is illustrated in Figure 56. The same departmental budgets may be summarized by type of expense.



ACE MANUFACTURING COMPANY

BUDGET REPORT

MONTH October 1955

DEPT HEAD R.R. Jones

DEPARTMENT TECHNICAL DIVISION NO

DESCRIPTION	CURRENT MONTH			YEAR TO DATE		
	BUDGET	ACTUAL	(OVER)/UNDER	BUDGET	ACTUAL	(OVER)/UNDER
SUMMARY OF TECHNICAL DIVISION EXPENSE BY DEPARTMENT						
RESEARCH & DEVELOPMENT						
901 Aluminum	$ 5,327	$ 5,195	$ 132	$ 29,129	$ 28,073	$1,056
902 Plastic	1,959	1,752	207	11,165	10,583	582
903 Rubber	3,074	3,246	(172)	16,454	16,333	121
904 Other Metals	3,169	2,815	354	16,941	16,090	851
TECHNICAL SERVICE						
911 Automotive	870	757	113	4,800	4,510	290
913 Aircraft	1,285	1,162	123	7,196	6,718	478
914 Boats	1,120	1,257	(137)	6,870	6,675	195
917 Military	1,573	1,444	129	8,293	8,075	218
918 Appliances - Small	1,194	1,162	32	6,996	6,823	173
OTHER						
920 General	129	129	-	1,527	1,527	-
930 Pilot Plant	9,587	9,587	-	55,455	54,369	1,086
945 Patents	6,355	6,941	(586)	38,130	38,557	(427)
949 Chicago Project	21,424	20,716	708	72,198	69,621	2,577
950 Library	752	752	-	752	752	-
TOTAL DEPARTMENT PERFORMANCE	$ 57,818	$ 56,915	$ 903	$ 275,906	$ 268,706	$7,200
PER CENT (OVER)/UNDER BUDGET			1.6%			2.7%

ISSUED BY THE ACCOUNTING DEPT. November 14, 1955

FIGURE 56. Summary of Actual and Budgeted Technical Division Expense by Department

Some companies follow a practice of establishing the departmental budgets and then setting the projects for each department.

Other Considerations In Setting Budgets. In establishing budgets, particularly project budgets, for research and development activities, decisions usually will have to be made on several matters, including:

a) Method of allocation of salary costs to projects.
b) Defining direct charges for projects.
c) Treatment of service department costs.
d) Treatment of sales income.

Some general comments may be helpful.

Most research workers are on a salary basis. A question should arise as to the proper treatment of the cost of overtime or illness. For example, if sixty hours are worked, how should the twenty hours over the normal work-week be treated (personnel assumed to be exempt from the Wage and Hour Law)? Again, should paid overtime be charged to the particular project on which worked? In general, all hours must be accounted for: those direct on projects; and those charged to overhead accounts, such as vacation or illness time. The total hours should be divided into the gross pay to arrive at an hourly cost; and projects and overhead accounts should be charged on this basis. Total hours worked, including overtime, should be used because the cost per hour *does* change Also, in many instances a particular project should not be charged because of overtime worked on it; the cause may lie with other projects. Hence, average cost is suggested. In some instances, moreover, it may be satisfactory to use average *departmental* rates rather than the actual hourly cost of each individual employee.

A second matter to be decided is what charges should be direct as to projects. Should only salaries and wages be direct? Or, should materials, traveling expense and similar items be prorated directly to all projects, even when applicable to a particular one? In general the answer must depend on the nature of these costs other than salaries and wages, and the degree of refinement wanted. If these other costs are incidental, they may be treated as overhead.

Every research organization has certain overhead and costs of service departments which cannot be charged direct to projects. Generally speaking, such expenses should be budgeted on a departmental basis, and allocated to projects on some logical basis. Many firms use total direct charges as a basis for overhead allocation. If the expenses are large, a more analytical approach can be taken, as in factory over-

THE PLASTIC MANUFACTURING COMPANY
SUMMARY PROJECT STATUS REPORT
For the Month Ended October 31, 1955

		EXPENDITURES											
		Month				Cumulative to Date			Estimated Cost to Compete				
PROJECT	Project No.	Man-Hours	Salaries and Wages	Other Expense	Total	Man-Hours	Amount	Purchase Order Commitments	Man-Hours	Amount	Indicated Total Cost	Project Budget	Indicated Cost (Over) or Under Budget
NEW PRODUCT RESEARCH													
Urea filler	1152	1,223	$ 3,790	$ 2,319	$ 6,109	3,994	$32,110	$ 1,519	500	$ 1,200	$ 34,829	$ 34,500	$ (329)
Automobile wax	1154	173	385	475	860	346	1,634	222	–	–	1,856	1,900	44
Phenolic resin	1159	812	3,420	820	4,240	1,042	6,321	8,301	400	1,200	15,822	16,000	178
Alkyl resin	1160	76	232	120	352	76	352	–	350	1,000	1,352	1,500	148
Total		2,284	$ 7,827	$ 3,734	$11,561	5,458	$40,417	$10,042	1,250	$ 3,400	$ 53,859	$ 53,900	$ 41
PRODUCT IMPROVEMENT													
Wet strength resins	1123	317	$ 702	$ 610	$ 1,312	892	$ 5,420	$ –	300	$ 1,300	$ 6,720	$ 6,800	$ 80
Brightness—pulp	1124	214	427	410	837	612	3,241	160	100	500	3,901	4,000	99
High quality rayon	1125	926	2,980	2,119	5,099	2,107	12,342	920	800	5,200	18,462	18,000	(462)
Core binder—adhesion	1126	173	350	722	1,072	173	1,072	–	5,000	22,000	23,072	23,000	(72)
Total		1,630	$ 4,459	$ 3,861	$ 8,320	3,784	$22,075	$1,080	6,200	$29,000	$ 52,155	$ 51,800	$ (355)
SALES SERVICE													
Paint	1129	173	$ 375	$ 10	$ 385	185	$ 397	$ –	–	$ –	$ 397	$ 1,000	$ 603
Molding compound	1130	865	2,310	2,460	4,770	2,540	16,310	2,400	2,000	7,100	25,810	30,000	4,190
Total		1,038	$ 2,685	$ 2,470	$ 5,155	2,725	$16,707	$ 2,400	2,000	$ 7,100	$ 26,207	$ 31,000	$4,793
FUNDAMENTAL RESEARCH													
Silicone resins	1127	223	$ 415	$ 375	$ 790	315	$ 875	$ –	200	$ 600	$ 1,475	$ 1,500	$ 25
Electronic appl.	1128	519	1,350	727	2,077	921	3,760	–	50	150	3,910	5,000	1,090
Total		742	$ 1,765	$ 1,102	$ 2,867	1,236	$ 4,635	$ –	250	$ 750	$ 5,385	$ 6,500	$1,115
TOTAL RESEARCH AND DEVELOPMENT		5,694	$16,736	$11,167	$27,903	13,203	$83,834	$13,522	9,700	$40,250	$137,606	$143,200	$5,594

FIGURE 57. Research and Development Project Budget Report

head. Several bases could be used, depending on the type of expense, viz., square feet for building maintenance or property insurance, payroll for payroll taxes, depreciation on an actual basis, etc.

Another problem encountered in project budgeting is the treatment of "income" arising from several sources, including:

a) Transfer of expendable product to the factory.
b) Service charges to customers.
c) Sale of products—finished and scrap.

Again, in general, if such credits are sizeable, it is considered preferable to establish a section of credits in the budget. Then both the gross and net expense are budgeted, and management can watch the situation. If, however, the credits are relatively small, they may be used to increase the funds available for completion of projects.

Budget Reports. The objective of the budget report is to provide the research staff, as well as management, with a statement of progress of individual projects as related to the budget, and also departmental performance. They must be reports which the research staff will understand and use. The over-all budget performance is illustrated in Figure 56. Supporting statements as to the detailed expenses by type of expense both budget and actual should be available for each department manager.

While over-all departmental cost control is effected by the illustrated budget reports, such information should be supplemented by project reports. A weekly project report is illustrated in Figure 58, and a summary report on budget performance for all projects is shown in Figure 57. It will be observed that commitments and indicated total cost of each project are shown.

Sometimes the researcher wants to have available the chronological cost history of the project. Such a report is illustrated in Figure 59. Because graphic presentation can be effective, a simple vertical bar chart comparing actual and budget may be usefully employed.

While it is important that each department manager be held to his budget, as is true in production, it is perhaps of even greater significance that the research projects be intelligently selected in the first instance; and that general tests be made of the effectiveness of research and development.

Preventive Control. As in any type of good management, it is desirable to plan expenditures before moneys are actually spent, so that the total research and development costs do not exceed the budget. It is simple to determine the number of personnel required, calculate the resulting salary and wage expense, and institute controls to see that no

THE NOVELTY MANUFACTURING COMPANY
WEEKLY STATUS REPORT—WEEK ENDED DECEMBER 21, 1955
RECLAIM PROJECT (NO. 247)

Department and Expense	Amount Authorized	Expenditures		Purchase Commitments	Total Expenditures and Commitments	Balance Unexpended
		This Week	To Date			
RESEARCH						
Salaries and Wages	$ 4,000	$ 475	$ 2,890	$ –	$ 2,890	$ 1,110
Supplies	5,000	319	3,870	1,540	5,410	(410)
Power	500	90	220	–	220	280
Other	100	15	35	10	45	55
Total	$ 9,600	$ 899	$ 7,015	$1,550	$ 8,565	$ 1,035
DEVELOPMENT						
Salaries and Wages	$10,000	$1,220	$ 1,325	$ –	$ 1,325	$ 8,675
Traveling	10,000	1,200	1,410	–	1,410	8,590
Other	2,000	310	320	–	320	1,680
Total	$22,000	$2,730	$ 3,055	$ –	$ 3,055	$18,945
PATENT						
Legal	$ 2,000	$ –	$ 800	$ –	$ 800	$ 1,200
Patent Applications	500	–	20	–	20	480
Miscellaneous	500	–	10	–	10	490
Total	$ 3,000	$ –	$ 830	$ –	$ 830	$ 2,170
Administrative	$ 4,000	$ 250	$ 1,250	$ –	$ 1,250	$ 2,750
Grand Total	$38,600	$3,879	$12,150	$1,550	$13,700	$24,900

FIGURE 58. Weekly Project Status Report

THE ILLUSTRATIVE COMPANY
PROJECT BUDGET REPORT—RESEARCH DIVISION
Period Ended July 31, 1955

Project No. ________________ Dept. ________________
Project Name ________________ Manager ________________

	Total		Detail of Actual Expenses				
				Salaries and Wages			
Month	Budget	Actual	Material	Technical	Non-Technical	Professional Fees	Overhead Etc.
January	$ 20,000	$ 20,000	$ 7,000	$10,000	$ –	$ –	$3,000
February	30.000	30,000	13,000	10,000	5,000	–	2,000
Year to Date ..	50,000	50,000	20,000	20,000	5,000	–	5,000
March	40,000	40,000	3,000	10,000	5,000	20,000	2,000
Year to Date ..	90,000	90,000	23,000	30,000	10,000	20,000	7,000
April	40,000	20,000	2,000	10,000	5,000	–	3,000
Year to Date ..	130.000	110,000	25,000	40,000	15,000	20,000	10,000
May	50,000	20,000	1,500	10,000	7,500	–	1,000
Year to Date ..	180,000	130,000	26,500	50,000	22,500	20,000	11,000
June	60,000	30,000	2,000	10,000	7,500	10,000	500
Year to Date ..	240,000	160,000	28,500	60,000	30,000	30,000	11,500
July	40,000	50,000	11,500	10,000	20,000	–	8,500
Year to Date ..	280,000	210,000	40,000	70,000	50,000	30,000	20,000
August	30,000						
Year to Date ..	310,000						
September	10,000						
Year to Date ..	320,000						
October	–						
Year to Date ..							
November	–						
Year to Date ..							
December	–						
Year to Date ..							
Total	$320,000						

FIGURE 59. Historical Record of Research Costs—By Project

excess staff is acquired. Similarly, commitments for laboratory chemicals and supplies, together with actual expenses, can be tabulated by the accounting department, so that the research director is kept informed by periodic statements as to how total expenditures and commitments relate to the budget. This type of information assumes more importance nearer the end of the project or budget period. If required, detailed information can be furnished—for illustration, a tabulated listing of each supply requisition or invoice. In short, some of the same techniques as used for preventive management in the production and sales fields can be applied to the effective control of research and development costs.

Control by Performance Standards. Necessary though budgetary control is, such performance cannot and should not be the sole criterion of research effectiveness. It is entirely possible to waste funds or to use them inefficiently and still remain within the limits imposed on expenditures. What is needed, therefore, is performance standards. It is true that research and development work is varied and sometimes difficult to predict. Yet in many instances performance standards have been used to good advantage. These standards do not serve as a substitute for the watchful eye and necessary guidance of the research supervisors, but they can be of assistance in evaluating the quantitative aspects of some phases of the work. Where the activities are numerous, the benefit of close personal supervision by the higher echelon is lost, but reports on performance can give some indication as to effectiveness.

Standards based on performance of other similar activities can be devised. The ingenuity and guidance of the research staff must be used in gathering the data and selecting bases for measurement and the functions to be measured. It is a joint project for both the accountant and the research technician. Suggestive of some applications are these:

1. Number of requisitions filled (laboratory supply room).
2. Cost per man-hour of supplies.
3. Cost per man-hour of total research expense.
4. Number of tests per month.
5. Number of formulas developed per man-week.
6. Number of pages of patent applications written per man-day.
7. Estimated man-hours for function (over-all project or part thereof. Similar to estimating maintenance or other job orders).
8. Cost per patent application.
9. Pounds of production per man-hour (pilot plant).
10. Cost per operating hour.

Does Research Pay Dividends? When all is said and done, the final measuring stick is whether or not the research "paid off." Is the company earning a good return, or does the cost of research and development exceed the return? This is the acid test. Some means must be discovered or used to compare expense and income on a particular project or projects. How can this be done? Generally speaking, research and development results in:

1. A cheaper manufacturing process, or
2. An improved product, or
3. A new product.

The problem is to value these results and compare them with the cost. The approach can take one of two avenues: The research expense can be compared with the *total* estimated savings or profits, or the expense may be compared against a *standard allowance,* perhaps expressed as a percentage of net sales. Obviously, not every research project undertaken can be expected to show a profit, but over a period of time management might well expect a rather high batting average.

If the fruit of research and development is a new process, the calculation of savings is relatively easy. The cost of the new process is compared with the old, including amortization of obsolete equipment, for an arbitrary number of years or for the life of the process. In this connection it might be mentioned that some firms have rules of thumb which, for example, stipulate that new equipment or other expenditures must pay for themselves in two years. If an "index of return" is used, then the measuring stick, which might be 3% of net sales, can be applied against the value of all sales for the year or years.

Where an improved product is developed, the worth of research and development is more difficult to measure. Basically, of course, the yardstick is the net profit on the sales secured because of the improvement as compared with the research cost. Or it may be the normally expected research expense—for example, 3% of net sales—on the sales resulting from the improved product as compared with actual expense. If the sales manager cannot estimate this volume realistically, then arbitrary decisions must be made, such as an equivalent of one year's sales. Finally, if a new product is developed, the measure may be the normal net profit over a period of years, or as an index, the normally expected research expense on this sales volume, expressed as a percentage of sales.

A comparative statement incorporating the above suggestions might appear as follows:

Product	Cost Savings or Net Profit (Three Years)	Standard Research Budget (3% of Net Sales)	Actual Research Expense	Gain or (Loss)
New Soapsaver	$ 3,540	$1,420	$1,560	$ (140)
New Allergon Process	12,400	5,400	1,100	4,300
New Quickmold	8,590	2,140	1,020	1,120
Improved Paintsaver	6,400	840	2,800	(1,960)
Total	$30,930	$9,800	$6,480	$3,320

It will be observed that this method may be used for measuring actual results as well as predicting the desirability of undertaking a new project. Obviously, in applying the method to planned projects, those which offer the greatest profit potentials should be considered.

Summary. In summary, the effective budgeting and cost control of research and development expense is accomplished by these steps:

1. An intelligent determination of an over-all limit which the company can prudently spend on research, based upon both short-term and long-term considerations.
2. Careful selection of individual projects on which research efforts are to be expended.
3. Keeping of departmental costs within predetermined limits.
4. Periodic reporting of budgeted and actual expenses, in total, and by departments and projects; including re-examination of desirability of continuing projects, and the taking of corrective action where expenses exceed budget.
5. Application of standards to check the effectiveness of particular functions.
6. Proper personal supervision of the research staff, and periodic reports on the projects from the research viewpoint.
7. Over-all testing of research effectiveness through a review of new products, new processes, or improvements.

It cannot be overemphasized that the effectiveness of research depends primarily on the research director and his staff. Budgetary control, and the other reviews suggested, are but an aid to the astute research administrator.

Chapter 21

ADMINISTRATIVE AND FINANCIAL EXPENSE BUDGET

The Administrative Function. The general administrative function has to do with over-all policy determination, direction, and control. General administrative activity includes some functions which relate to all other activities but are not strictly administrative in nature. They are so closely allied, however, as to warrant inclusion in this group. The departments in a typical business organization which may be gathered together as administrative include:

General Executive Departments.
Legal Department.
Financial or Treasury Department.
Accounting (and Statistical) Department.
Purchasing Department.
Personnel or Industrial Relations Department.

Some expenses of the general executive departments, as well as the legal and treasury departments, deserve special comment because of special limitations or because of their very nature. This is done later in the chapter. Aside from these expenses which require individual comment, the others are very much alike, regardless of the department in which they fall. They are, therefore, considered as a group in terms of the general procedure or method of budgeting and control.

Items Included. Administrative and financial expenses may be said to include all items of expense of a general administrative and financial nature which it is not feasible to include as manufacturing, distribution, or research costs. The usual departmental costs of doing business will be found herein: salaries, wages, supplies, dues and subscriptions, telephone and telegraph, traveling expense, rent, postage, depreciation, etc. In addition to these ordinary expenses incident to the actual operation of the administrative departments are some not usually found elsewhere:

Executive incentive payments.
Contributions.
Interest expense.
Income taxes.
Legal and professional expense.
Corporate expenses.
Excess facility costs.
Gain or loss on sale of capital assets.
Bad debts.
Cash discounts.
Other income and expense.

Approach to Budgeting and Control of Expenses. The authors have found from experience that there is a certain laxness in the control of administrative and financial expense. This results in part from the fact that a variety of expenses is involved—many of which are seemingly unpredictable and incapable of standardization. It may result, also, from failure to assign the responsibility for control of particular costs to a specific executive, as well as inadequate accounting methods. To be sure, there are some kinds of administrative expense which are difficult to determine in advance and which bear little relationship to production or distribution activities. But losses can result from excessive expenditures in this field quite as readily as in the manufacturing, distribution, or research fields. Therefore, administrative and financial expenses must be budgeted and controlled.

Two prerequisites are essential to acceptable budgeting and control procedures: (1) an intelligent classification of accounts which sets forth the expenses in necessary detail, and (2) the definite assignment of control responsibility to one individual. The expenses should be separated into their fixed or variable elements, and the best units of variability determined. Some may be related to sales dollars, production man-hours, or net profit before taxes. Whatever the unit of variability, it can be applied in the manner described in the chapters on production costs. Administrative and financial expenses are likely to be more constant and less likely to respond to changes in sales or production. Some are determined by the board of directors and are fixed in nature. The task in such cases is to provide information so that reasonable levels of expense are approved, and then to ascertain that the expenditure is kept within the authorized limits. Other expenses may be determined by the executive committee or the company president. In these cases, too, the problem is to see that the facts are presented to arrive at a fair level of expense for the expected volume, and then kept within the limitation set. The same type of preventive management and budgetary control reports can be applied here as is used for other expenses.

Comments on various expenses or groups of expenses are made hereafter.

Accounting Division Budgets. Accounting and clerical costs may be subjected to the same type of control as are other activities.

Within the accounting division, if the company is large enough, will be found several departments whose managers can be held responsible for cost control. Budgets should be prepared in detail for each activity whose head is given the authority and responsibility to keep expenses within the budget limits. Some of the departments which may be logical budgetary control units are:

General Accounting.
Cost Accounting.
Auditing.
Tax.
Budgets and Standards.
Insurance.
Office Service.
Payroll.
Tabulating.

Each department head should be given a voice in setting his budget.

Practical experience will indicate that accounting costs are not all fixed, any more than are purchasing costs or industrial relations costs. However, a relatively larger portion may be fixed. Some simple variable factors should be found which will serve to indicate the expense justified at each level of activity. Thus, standard or actual labor hours in the factory may be used in the payroll department. At any given time, the total budget allowance would be the fixed expense plus an amount per standard labor hour. Other factors of variability might be dollar sales volume, units of sale, or number of transactions.

The budget department should prepare the same reports on the accounting activities as it does on that of others in order that management may be informed of the budget performance. An example of a plant controller's budget report is shown in Figure 60. In this case a base allowance has been established to which is added a fluctuating allowance depending on factory productivity. For this month, the added allowance was based on 82.699 thousand standard man-hours. In the following month, the additional allowance might be restricted to only 68 units. Such a method of granting allowances does relate accounting costs to the income-producing factor—standard labor hours.

Figure 60 also illustrates a practice of assigning to a specific executive the responsibility for expense control of items other than his own departmental expenses. In this case, office supplies, postage, etc. were not departmentalized in the accounts and the controller was assigned the task of keeping them in line.

Control of Accounting Costs Through the Use of Standards. A second tool to be used in controlling accounting costs is standards of performance and cost. These standards can be applied to many office functions just as they have been applied to manufacturing and sales functions. They are not applicable to all accounting activities, nor can the same degree of accuracy be secured as in the factory. But in many offices, the possible cost savings for certain clerical activities are sufficient to justify the effort of establishing the standards.

While the general method of setting standards was discussed in preceding chapters, the application to the measurement of clerical work is outlined as follows:

1. *Preliminary observation and analysis.* This step is fundamental in securing the necessary over-all understanding of the problem, and in selecting those areas of activity which may lend themselves to standardization. Also, it assists in eliminating any obviously major weakness in routine.
2. *Selection of functions on which standards are to be set.* Standards should be set only on those activities which are in sufficient volume to justify standards.
3. *Determination of the unit of work.* A unit must be selected in which the standard may be expressed. This will depend on the degree of specialization and the volume of work.
4. *Determination of the best method and setting of the standard.* Time and motion study can be applied to office work, with sufficient allowance being given for fatigue and personal needs.
5. *Testing of the standard.* After the standard has been set, it should be tested to see that it is practical.
6. *Final application.* This involves using the standard, and preparing simple reports which the supervisor and the individual worker can see. It also requires a full explanation to the employee.

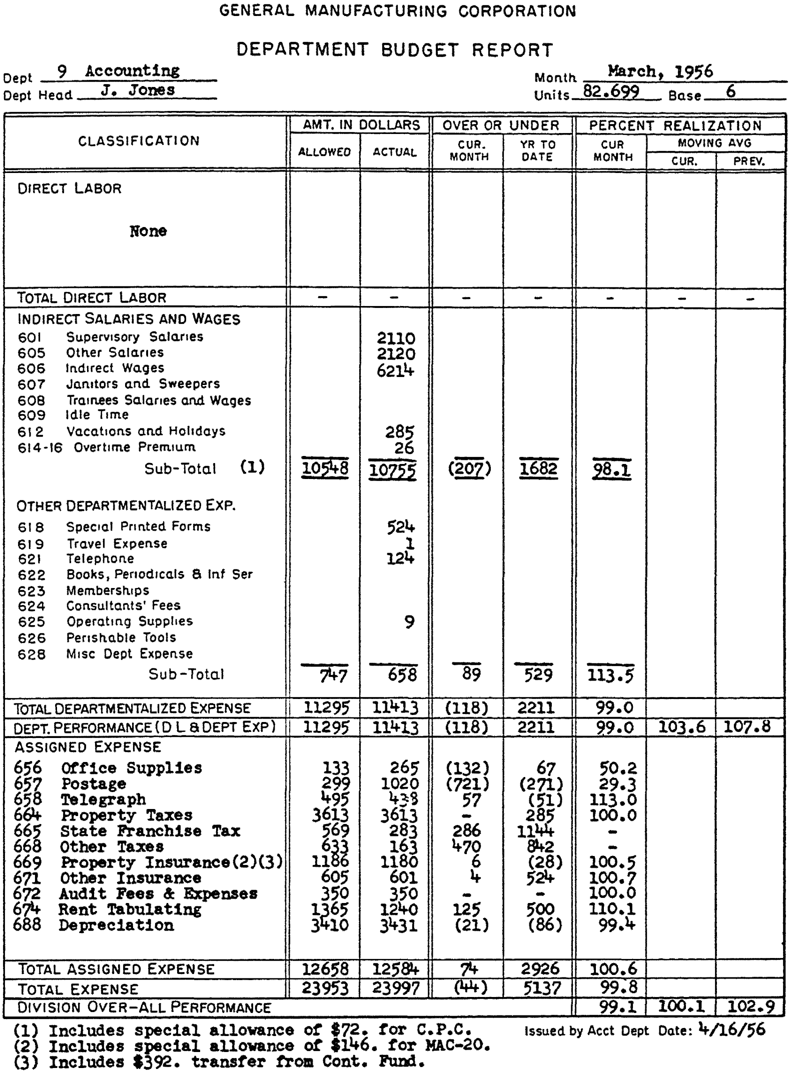
Illustrative accounting and clerical functions which lend themselves to standardization, and the units of work which may be used to measure performance are these:

FUNCTION	UNIT OF STANDARD MEASUREMENT
Order handling	Number of orders handled
Mail handling	Number of pieces handled
Billing	Number of invoice lines
Check writing	Number of checks written
Posting	Number of postings
Filing	Number of pieces filed
Punching—tabulating cards	Number of cards punched
Typing	Number of lines typed
Customer statements	Number of statements
Order writing	Number of order lines

In addition to performance standards, unit cost standards can be applied to measure an individual function or over-all activity. Thus, applying cost standards to credit and collection functions may involve these functions and units of measurement:

Functional Activity	Unit Cost Standard
Credit investigation and approval	Cost per sales order Cost per account sold Cost per credit sales transaction
Credit correspondence records and files	Cost per sales order Cost per letter Cost per account sold
Preparing invoices	Cost per invoice line Cost per item Cost per invoice Cost per order line Cost per order
Entire accounts receivable records, including posting of charges and credits and preparation of customers' statements	Cost per account Cost per sales order Cost per sales transaction
Posting charges	Cost per invoice Cost per shipment
Preparing customers' statements	Cost per statement Cost per account sold
Posting credits	Cost per remittance Cost per account sold
Calculating commissions on cash collected	Cost per remittance
Making street collections	Cost per customer Cost per dollar collected
Window collections	Cost per collection

Other General Expenses. The approach suggested for the budgeting and control of accounting department costs is applicable in more or less varying degree to other general and administrative departments. These would include the legal department, purchasing department, personnel department, etc. Further comments will be made in succeeding sections on the special costs usually included in general and administrative expense.



GENERAL MANUFACTURING CORPORATION

DEPARTMENT BUDGET REPORT

Dept 9 Accounting
Dept Head J. Jones
Month March, 1956
Units 82.699 Base 6

CLASSIFICATION	AMT. IN DOLLARS		OVER OR UNDER		PERCENT REALIZATION		
	ALLOWED	ACTUAL	CUR. MONTH	YR TO DATE	CUR MONTH	MOVING AVG	
						CUR.	PREV.
DIRECT LABOR							
None							
TOTAL DIRECT LABOR	-	-	-	-	-	-	-
INDIRECT SALARIES AND WAGES							
601 Supervisory Salaries		2110					
605 Other Salaries		2120					
606 Indirect Wages		6214					
607 Janitors and Sweepers							
608 Trainees Salaries and Wages							
609 Idle Time							
612 Vacations and Holidays		285					
614-16 Overtime Premium		26					
Sub-Total (1)	10548	10755	(207)	1682	98.1		
OTHER DEPARTMENTALIZED EXP.							
618 Special Printed Forms		524					
619 Travel Expense		1					
621 Telephone		124					
622 Books, Periodicals & Inf Ser							
623 Memberships							
624 Consultants' Fees							
625 Operating Supplies		9					
626 Perishable Tools							
628 Misc Dept Expense							
Sub-Total	747	658	89	529	113.5		
TOTAL DEPARTMENTALIZED EXPENSE	11295	11413	(118)	2211	99.0		
DEPT. PERFORMANCE (D L & DEPT EXP)	11295	11413	(118)	2211	99.0	103.6	107.8
ASSIGNED EXPENSE							
656 Office Supplies	133	265	(132)	67	50.2		
657 Postage	299	1020	(721)	(271)	29.3		
658 Telegraph	495	438	57	(51)	113.0		
664 Property Taxes	3613	3613	-	285	100.0		
665 State Franchise Tax	569	283	286	1144	-		
668 Other Taxes	633	163	470	842	-		
669 Property Insurance(2)(3)	1186	1180	6	(28)	100.5		
671 Other Insurance	605	601	4	524	100.7		
672 Audit Fees & Expenses	350	350	-	-	100.0		
674 Rent Tabulating	1365	1240	125	500	110.1		
688 Depreciation	3410	3431	(21)	(86)	99.4		
TOTAL ASSIGNED EXPENSE	12658	12584	74	2926	100.6		
TOTAL EXPENSE	23953	23997	(44)	5137	99.8		
DIVISION OVER-ALL PERFORMANCE					99.1	100.1	102.9

(1) Includes special allowance of $72. for C.P.C.
(2) Includes special allowance of $146. for MAC-20.
(3) Includes $392. transfer from Cont. Fund.

Issued by Acct Dept Date: 4/16/56

FIGURE 60. Departmental Budget Report—Accounting

Budgets for these departments oftentimes are subject to over-all tests. For example, the purchasing department costs might be measured by the cost per dollar of purchase; or per purchase order. Similarly, the personnel department budget could be tested by such standard relationships as the percentage of such costs to total regular payroll, cost per employee-year, or cost per budgeted labor hour.

Compensation of Officers and Directors. The compensation of officers and directors consist of salaries, bonuses, and directors' fees. These are usually determined yearly in advance by the board of directors or executive committee and offer no particular problem either of budgeting or of control. Bonuses must be estimated but this can be done on the basis of the governing factors which will appear in the operating or financial budgets.

In close corporations the compensation of stockholder-officers is often made as high as reasonable compensation will allow in order to avoid the double taxation on corporate earnings.

Administrative Salaries. The compensation of functional executives such as those related to sales, production, accounting, credit, purchasing, etc., should be budgeted with their respective functional budgets. The compensation of general administrative executives, other than corporate officers, may be budgeted as a separate item. Their compensation is fixed in a variety of ways and consists of salaries, bonuses, profit-sharing plans or some combinations of these. Here again, no particular budgeting problem arises. Salary estimates can be obtained from those responsible and bonuses can be estimated from the operating and financial budgets.

Vacations, Pensions, and Retirement Benefits. In recent years there has been a marked increase in the number of companies providing vacations with pay and various retirement benefits. All such costs can be predetermined with reasonable accuracy. They should be first distributed functionally and then the load equitably distributed to months throughout the budget period. For example, while vacations may fall chiefly in summer months, the costs should be distributed to months throughout the year on the basis of budgeted volume factors. Budgetary control of these costs may be handled through departmentalization of the items. Generally speaking, control of salary and wages—or staffs—will permit control of these "fringe" costs.

Administrative Payroll Taxes and Insurance. Taxes and insurance based on payroll include social security taxes; industrial insurance; and health, accident, and life insurance. The portion of these costs which will apply to the administrative payroll can be readily determined, once the administrative salaries have been budgeted. Their control must be effected through the control of administrative salaries and wages.

Contributions, Dues, and Subscriptions. Most companies are called upon to contribute to various charitable institutions, civic undertakings, and similar activities. While such requests cannot be ignored, lack of proper control easily can result in donations which are either beyond the means of the company or are unreasonable in amount. A policy as to such costs should be established, and the budget set accordingly. Some businesses submit a specific list each year for approval by the executive staff or board of directors. Often a miscellaneous lump is used from which payments may be authorized for subsequent small requests. In setting an over-all budget, one procedure is to determine a reasonable contribution per employee. For example, the management might decide that five dollars per employee is the measure of fair sum to donate annually to the Community Chest. A specified share of estimated income might be another basis for establishing a budget.

Dues and subscriptions may be budgeted on the basis of an approved list prepared annually. Such applicable costs would be included in each departmental budget, but the over-all listing and approval serves to emphasize the aggregate cost.

Other Income and Expense, Losses and Gains. For most concerns there are various items of income other than sales (or the chief revenue source) such as dividends, interest, rent, royalties, or other types of return on investments. These can usually be estimated for the budget period with little difficulty. Purchase discounts may also be included here unless previously included in the materials budget. There are also various items of expense of a nonoperating nature which must be estimated. Sales discounts may be included either here or in the budget of sales deductions, depending upon the company's policy of considering this item as an operating or nonoperating item. The estimate of sales discounts can be provided by the sales, credit, and accounting departments. Bad debt losses can be estimated, based on past experience, as a percentage of budgeted sales.

When the plant and equipment and financial budgets contemplate the sale or scrapping of fixed assets or the sale of investments, provision must also be made for the estimated losses and gains.

Interest, Income Taxes, and Dividends. The interest expense of the budget period can be readily determined from the financial budget as described in Chapter 23. When the financial budget is completed, it will indicate the indebtedness which is to be continued through the budget period, new borrowings, and payments from which the interest cost can be calculated.

When no change in income tax legislation is impending (which in recent years has seldom been the case), the income taxes can be calculated on the basis of the budgeted profit. When new legislation is impending, the executives must venture a guess as to what the new tax rates will be. The tax estimate has been made more difficult in recent years by the practice of making the new legislation retroactive.

Due to the enormous public debt the federal taxes will constitute one of the largest items of business cost for many years to come. Little can be done directly to control this cost other than to arrange the corporate and investment structure of the business to the best tax-wise advantage. Such changes are usually infrequent and major considerations involving outside legal and tax counsel. Indirectly management has a definite responsibility for the control of the tax load through the promotion of constructive tax legislation and the curbing of governmental waste and extravagance. This can be done both locally and nationally through intelligent individual and association efforts.

The estimate of dividend payments to be made during the budget period must be made by the board of directors on the basis of the budgeted net income and cash position as explained in Chapter 23.

Excessive Facility Costs. Where a company has excessive production or distribution facilities of a more or less permanent nature as a result of previous errors in executive judgment, the cost of carrying such facilities until they can be disposed of to advantage may be budgeted as a separate administrative item. This is necessary only when they are relatively important as when plants and warehouses or major portions thereof are no longer productive. The costs consist of taxes, insurance, maintenance, etc., and are easily determined. Depreciation should also be included until the facilities are written down to their realizable value. Actual reduction should be made, however, when the situation becomes reasonably certain. Provision should be made in the budget to cover such costs.

Corporate Expenses. There are various corporate expenses which must be estimated by the various executives responsible. These include such items as the professional fees of auditors, lawyers, engineers, economists, etc.; fidelity bonds and insurance; fees of fiscal agents; and state and federal capital stock and franchise taxes. No particular problem arises in securing reasonable estimates of such items. The control of such expenses is largely a matter of direct executive responsibility.

Chapter 22

PLANT AND EQUIPMENT BUDGET

Importance of Plant and Equipment Budget. The ability of a business to earn a satisfactory return on the investment is an important measure of sucessful management. By applying such a standard of performance, sound business judgment will not commit funds without a proper test of profitability. It follows, therefore, that the plant and equipment budget is one of the most important elements in the entire budgetary program. This is particularly true in those enterprises in which capital expenditures represent a relatively large part of the total share of funds employed in the business.

Mistakes made in unwise plant expenditures can seldom be rectified without serious loss to investors whereas with other expenditures the dangers are usually somewhat less. A vast amount of ill-advised expenditure in plant and equipment has been made by American industry which could have, and frequently would have, been prevented by an intelligent study of the need for such facilities and the probability of ultimately recovering their cost through the manufacture and sale of products or services.

It should not be inferred from the above statement that the primary function of the plant and equipment budget is to prevent or restrict capital expenditures. It is rather to subject such expenditures to the most exacting tests and the most searching inquiry in the light of future possibilities. When considered judgment, based upon diligent study as to past and probable future needs, indicates a demand for extended facilities a program should be developed to secure them. While millions of dollars have been wasted in unwise expansion, much industrial progress has resulted from the courage of some industrial leaders to extend their facilities in accordance with intelligent consideration of future possibilities.

Items Included. The term "plant and equipment budget" is commonly used to signify all capital expenditures. In manufacturing it usually includes all such items as land, leaseholds, buildings, machinery, tools, sidings, yard facilities, transportation equipment, patterns, molds, dies, fixtures, etc. It may include also certain intangibles such as patents, franchises, trade marks, trade names, and goodwill.

In public utilities this budget includes also such items as power sites, dams, transmission facilities, pipe lines, etc.; in transportation concerns, it includes rights of way, roadbeds, bridges, rolling stock, ships, docks, etc.; and in mining concerns, all ore deposits and mining, transporting, smelting, and refining facilities.

In developing the budget, the plant and equipment expenditures should be classified as to replacements, improvements, and additions. Its final summarization should reveal the value of the plant and equipment items at the beginning of the budget period; reserves for depreciation, depletion, and obsolescence at the beginning of the budget period; estimated retirements and additions for the budget period; estimated depreciation. depletion, and obsolescence for the budget period; and estimated plant value as of the close of the budget period.

One large manufacturing concern develops its plant and equipment budget in accordance with the following classifications:

ASSET VALUES

- Old Equipment
  - Amount at beginning of period.
  - Additions planned for period.
  - Withdrawals expected or planned for period.
  - Depreciation to be taken during period.
  - Amount at end of period.

- New Equipment
  - Charges for period.
  - Depreciation to be taken during period.
  - Amount at end of period.

- Total Equipment
  - Amount at beginning of period.
  - Additions planned for period.
  - Withdrawals expected or planned for period.
  - Depreciation to be taken during period.
  - Amount at end of period.

MAINTENANCE

Current charges—minor repairs and maintenance planned.
Special authorizations—major repairs and maintenance planned.
Total repairs and maintenance planned.

The maintenance and repair budget may or may not be included with the plant and equipment budget. The former is an item of manufacturing expense and may be included as a part of that general budget; however, in some concerns the construction of new equipment is largely handled by the maintenance department and there are certain advantages in budgeting the work of that department as a whole. Moreover, the procedure of authorization and cost control is often the same for both new construction and major repairs. For this reason some concerns include maintenance and repair costs in the plant and equipment budget.

Purposes and Objectives. Plant and equipment expenditures are made for the maintenance and replacement of present equipment and for the addition of new equipment. A certain amount of such expenditure is usually imperative if the concern is to continue operation; a considerable amount, however, can be delayed for a reasonable period; and some such expenditures are contingent entirely upon the decisions of management as to the rate of growth desired. The amount of such expenditures in any one year can thus be largely controlled by management. The basic purpose of budgeting such expenditures is to give considered judgment to their desirability, the time when they should be made, and the availability of funds by which they can be safely financed.

More specifically the purposes and objectives of the plant and equipment budget are:

1. To ascertain the amount which can safely be invested in plant facilities.
2. To test any contemplated expansion by the increased volume and earnings necessary to justify it.
3. To test expenditures proposed for the purpose of reducing costs and increasing revenue.
4. To provide adequate facilities for carrying out the sales and production program.
5. To plan the expenditures so that they will be made at the most advantageous time.
6. To enforce a thorough inquiry into the type of facilities best suited to the needs of the company and the method to be employed in providing them.
7. To provide a basis for planning financial requirements.
8. To restrict the expenditures to those actually authorized.
9. To control the cost of plant and equipment expenditures.

General Approach to Budgetary Control. From the budgetary viewpoint there are *four* distinct phases of control. In order to retain the proper perspective, it is well to outline these different aspects before considering the more detailed techniques related to the plant and equipment budget. Preventive control over capital expenditures may be said to comprise these four steps:

1. *Long-term planning.* This phase coordinates the long-range plan for capital expenditures with the financial budget and the long-term sales program. Investment in plant and equipment is necessarily a long-term proposition because recovery usually extends over a considerable period of time. Under such circumstances it would be an imprudent management which did not insist on charting trends and reviewing long-term prospects.

   Such planning may extend twenty or twenty-five years into the future. Of course, these long-term budgets are subject to revision, and must be flexible. But the advantages from the standpoint of judging the need for capital expenditures, and timing such disbursements in accordance with the availability of funds, should be clear.
2. *Short-term budgeting.* This involves planning the expenditure for the immediate budget period—usually the next six or twelve months.

   The objective, among other things, is to restrict the short-term capital expenditures to well-chosen projects within the limit of available funds. Approval of a short-term budget is often merely the concurrence *in principle* with the projects. It does not constitute authority to incur obligations; this must wait approval of the appropriation request.
3. *Approval of appropriations.* Requests for an appropriation for each specific project (except perhaps a miscellaneous grouping) must be prepared in detail and submitted for executive analysis and approval. Such approval grants permission to spend the money in accordance with the terms of the appropriation.
4. *Control of actual expenditures.* Once the authority is granted to purchase or build the asset, then steps must be taken to assure that expenditures will be kept within the limits of the appropriation. As will be discussed later, even this phase of budgetary control has a *preventive* side or facet which permits corrective action to be taken *before* expenditures are made in excess of the amount of the appropriation.

These four steps constitute a well-conceived plan for the control of expenditures for plant and equipment. Some companies may control plant and equipment investment on the basis of appropriations only. It would appear necessary and desirable, however, to approach the problem from the longer term and perhaps more balanced viewpoint. In considering the various purposes of plant and equipment budgeting, as discussed in detail in the next few sections, the application to each of these four phases should be kept in mind.

Amount to be Invested in Plant. One of the purposes of budgeting is to determine the amount which can be safely invested in plant and equipment.

The available funds of a business concern should be invested where they will yield the greatest return consistent with reasonable safety. This may be in additional working capital or in plant and equipment. It is never easy to ascertain just the proportion which should be in plant; however, various industries fall into more or less standard patterns which should be observed and used as basic guides. A public utility, for example, may be justified in extending its plant investment only to a certain point in relation to the units of service which it expects to provide. A department store can relate its plant investment to its long-term dollar volume expectancy; a steel mill to its tonnage; etc. While no exact standard relationships are available to most concerns, it is possible to observe the general pattern of the industry and particularly that of concerns within an industry which have had long and prosperous experience.

Some ratios which may serve as a guide include:

1. *Ratio of net worth to fixed assets.* This is secured by dividing the net worth by the fixed assets less the reserves for depreciation. Such a ratio will give some indication of any tendency to overinvest in capital assets. The same information can be gained by checking the percentage of fixed assets to net worth.
2. *Ratio of sales to fixed assets.* Such a ratio indicates the use being made of fixed assets. The markup factor is included in the sales figure, and may distort the relationship somewhat. However, the information to calculate the ratio of the industry is usually available from published reports.
3. *Ratio of cost of goods manufactured to fixed assets.* Where available, the ratio gives a more accurate indication than (2) above, although serving the same general purpose.

Such relationships are only guides, and cannot take the place of good judgment. But if indications are present that a firm has too large a share of its investment in plant and equipment, then it would do well to strengthen its position before adding more facilities.

It will bear mentioning that a review of bankruptcy cases indicates an unduly heavy investment in plant and equipment as an important contributing cause of insolvency.

Testing Contemplated Expansion—Increased Sales Volume. When any important expansion of plant facilities is under consideration, the budget procedure serves as a test of the desirability of such expansion. By projecting the added fixed costs into future operating statements, it is possible to reveal the effect of the proposals on operating profit and to emphasize the increased physical and money volume of sales required to justify the expansion. While it appears to be a very elementary requirement that management should make such tests before expanding facilities, it not infrequently happens that some elements of the cost are missed, or that management fails to realize the length of the period during which the increased volume must be maintained to justify the investment. Particularly in good times, when volume is available in excess of capacity and when enthusiasm is running at a high tide, is there danger of quick action on enlarged facilities which might not bear the test of cold analysis required by intelligent budget procedure.

When facilities are being considered for the purpose of increasing sales volume, at least two factors should be kept in mind when calculating the applicable costs:

1. The *"marginal"* or "increment" approach should be used in determining the true earning possibilities. General manufacturing overhead, as well as other overhead, should not be allocated in the customary way over the new sales or production. Or, to state the principle in other words, any reduction in overhead allocated to the present production should be considered a savings as a result of the proposed investment.

It goes without saying, of course, that in addition to the direct costs, the new sales volume usually must be sufficiently profitable to carry its share of overhead.

2. The effect of the increased volume on the level of selling and administrative expense, as well as working capital, should be viewed realistically. It is often assumed that new products, or a higher volume of existing goods, can be distributed without incurring additional selling or administrative expense. Rarely is this the case. Increased volume usually means increased billings to customers, an increase in other administrative services, a heavier work load on the supervisory staff with resulting increase in personnel or higher salaries or an expanded advertising program to reach new markets. It cannot be concluded that such costs are entirely fixed. The added costs should be charged against the increased sales volume.

Expenditures for Cost Reduction. Production men are constantly on the alert for new production methods which reduce cost, increase output, reduce spoilage, etc. To the production man there is a definite fascination about new tools and machines which will perform new operations or perform old ones faster or better. This is desirable but it does present an element of danger. The problem is much the same as that presented to the automobile driver. There is the temptation to replace the old car with a new one without too accurate an analysis of the relative cost of transportation with the old and new. It is doubtless true that such non-cost factors as pride of ownership influence the car driver but new developments in tools possess something of the same fascination to mechanical men as new cars do to the average driver.

There must be no retarding of mechanical progress in a concern but the advantages of the new equipment should be definitely proved and the costs closely checked. It is not hard to find cases where faster equipment has been installed when the older and slower equipment could more than meet the requirements. Even this may be desirable if operating costs are to be materially reduced but this should be demonstrated.

In evaluating the desirability of purchasing replacement equipment, some general guides may be noted:[1]

1. Estimates of costs should be based on the expected sales volume. Though the proposed equipment has added capacity over and above the facilities to be replaced, the present sales volume should be the basis of calculation unless there is a good reason to anticipate a permanently higher sales level.

2. Only the scrap or sales value of the old equipment should be considered in making cost comparisons. This is but a reflection that some share of the expenditure already made may be lost. If the undepreciated balance is much higher than the sales value, this may be evidence of obsolescence or too low a depreciation rate. This error in past costing should not burden present costs.

For the same reason, the undepreciated cost of present equipment should not be added to the proposed investment. It is a "sunk" cost and has no bearing on the savings or profits to be realized from new investments.

3. The effect of reduced direct costs in relation to manufacturing overhead should be carefully weighed. For example, assume a case where overhead is allocated on a direct labor hours basis. It does not follow that because the labor hours will be reduced the overhead will be lowered correspondingly. Application of a given overhead rate to a labor hour base will probably result in an overstatement of the cost

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[1] From *Controllership—The Work of the Accounting Executive,* by J. B. Heckert and J. D. Willson (New York: The Ronald Press Co., 1952), pp. 280-82.

reduction. The manufacturing expense should be checked to ascertain the true effect. In many instances, it will be found practical to ignore any overhead savings.

4. Actual costs incident to the operation should be considered, regardless of the normal accounting treatment. In addition to the usual operating costs and the expenditure to be capitalized, there may be other nonrecurring costs, incident to the removal of old equipment or to rearrangements. Such costs should be considered in computing cost savings.

5. Interest on investment should be included as part of the cost. The rate should depend on the return which would be earned, were the funds employed otherwise.

6. The estimated savings or profits should be calculated after income taxes. The high tax rates make it mandatory to determine the effect of the proposal after income taxes.

A calculation of net savings, based on the factors mentioned above, is illustrated on the next page. Assume, for example, that a new installation would cost $40,000, with an estimated useful life of ten years, and no salvage value. Further, assume the present equipment cost $20,000 with an undepreciated balance of $10,000, a remaining useful life of five years, and a scrap value of $4,000 in the market today. Thus, over the next five years, the length of life of the present equipment, a net annual savings of $581, or 2.58% of average net investment, reasonably can be expected to be realized if related production and sales volume are as forecasted. In many industries, such a low rate of return would make the desirability of such an investment appear rather doubtful.

Providing for Production and Sales Programs. Plant facilities as ultimately planned in the budget must provide for executing the production and sales programs. As emphasized in previous chapters, these factors are interrelated. Presumably a production and sales program will not be budgeted for which plant facilities are not available or cannot be made available.

It is desirable to make a long-term estimate of plant requirements to conform to the long-term estimates of sales and production. This is tentative in form and subject to frequent revision but it serves a useful purpose. With such a long-term program at hand it is possible to make the investments at advantageous times and to coordinate the financial plans so that funds will be available when needed. Moreover, facilities which require considerable time for construction can be planned for completion when needed.

The requirements for the near term can be determined with reason-

INVESTMENT REQUIRED:	
New equipment, delivered	$40,000
Removal of old machinery, and necessary rearrangements (expense)	5,000
Total cost	$45,000
Less salvage value of old equipment	4,000
Net investment	$41,000
Average net annual investment $\left(\frac{\$41,000 + \$4,100}{2}\right)^*$	$22,550

ANNUAL OPERATING COSTS:

Description	Present Installation	Proposed Installation
Direct labor	$12,600	$ 8,100
Payroll taxes and insurance	1,260	810
Power, repairs, and supplies	3,000	1,700
Other variable overhead	700	700
Total direct cost	$17,560	$11,310
Depreciation:		
Present unit (1/5 times $4,000)	800	
Proposed unit (1/10 times $41,000)		4,100
Property taxes and insurance:		
Present unit $\left(2\% \text{ of } \frac{\$4,000 + \$800}{2}\right)$ or (2% of $2,400)	48	
Proposed unit $\left(2\% \text{ of } \frac{\$45,000 + \$4,500}{2}\right)$ or (2% of $24,750)		495
Interest on investment:		
Present (6% of $2,400)	144	
Proposed (6% of $24,750)		1,485
Total annual cost	$18,552	$17,390

Annual Savings:	
Net annual savings before income taxes ($18,552 − $17,390)	$1,162
Less applicable income taxes (50%)	581
Net savings	$ 581

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* The average of a reducing balance is calculated as an average of the net value of the equipment at the beginning of the first and last years of estimated useful life.

able accuracy. They consist of the minimum replacements and additions necessary for the execution of the immediate sales and production program—usually that of the budget period. While management may deem it wise to budget plant expenditures in excess of the minimum requirements, the latter is usually the starting point.

The method of ascertaining what expenditures will be required is usually to provide the operating heads and selected subordinates with tentative figures as to volume expectancy and to require them to submit statements of facilities needed.

Often such data may be submitted independent of the short-term budget, but more frequently it is combined with other requirements. In considering the requests, sufficient detail is presented to study the proposal intelligently, as discussed in preceding sections.

One factor which should be checked is the possibility of securing the needed expansion through an increase in the number of operating hours or number of shifts. In other instances it is possible to increase production by eliminating bottlenecks or by reducing the variety of products offered. Such action may provide considerable increase in volume with limited additions to plant facilities.

Planning the Time of Expenditures. Any expansion of plant facilities should, in so far as possible, be made during periods of depression when prices are low rather than in periods of intense activity when prices are high. To a considerable extent this rule applies also to major repairs and replacements. Some of the latter must be made currently as old equipment becomes useless but, with many items, there is several years latitude in which the replacements may be made.

Far too often the opposite rule is followed, with the result that periods of depression are loaded with high fixed costs resulting from expanded facilities constructed at excessive costs during previous periods of prosperity. It must be admitted that considerable courage is required to replace and expand facilities when business is at a low ebb; and, likewise, that some executive will power is necessary to resist the temptation of expansion when volume is easy to get; however, such a policy has been followed by some of the most successful concerns.

Long-term planning of plant requirements assists materially in timing the expenditures to the best advantage and strengthening the courage of management to follow such a course.

Care in Selecting Facilities. The budgeting of plant expenditures invariably has the effect of enforcing a more thorough inquiry into the type of facilities best suited to the needs of the company. The very nature of the budget procedure requires that minor and major executives turn their attention to the plant needs of the company much earlier than if no systematic planning procedure were in effect. This results in more thorough investigation, a better sifting of opinions and experience, and more accurate examination of costs and operating effects.

The same point may be made in connection with the method to be employed in providing needed facilities. It often happens that these may be either constructed, leased, or purchased. With ample time to consider all possibilities, the most advantageous method can be selected.

Providing a Basis for Financial Planning. The plant and equipment budget is essential as a basis for financial planning. This applies to both the immediate and the long-term plant budgets. Obviously, cash must be made available for any immediate expenditures, and plans should be laid well in advance for the financing of any important plant expansion. If the funds are to come from accumulated earnings, dividends must be restricted, perhaps over a considerable period of time. If additional stock issues are to be sold or if borrowings are to be made, they should be planned far enough in advance to take advantage of favorable markets.

Particularly in those concerns where there is a shortage of working capital or where control rests on a narrow margin is it necessary to plan carefully for the financing of plant expenditures.

Priorities in the Plant and Equipment Budget. With an understanding as to general principles, purposes, and approach to budgeting, some consideration should be given to the procedures or techniques which have been found useful or necessary in practice.

In most firms, since funds are limited, not everything requested can be approved for immediate or short-term expenditure. It is necessary to classify the requests in the order of need or urgency. A schedule of priorities must be established. Suggested groupings are as follows:

A. *Absolutely essential*
   1. Necessary rebuilding or replacement of facilities which are physically exhausted.
   2. Modifications, changes, or additions necessary to the safety and health of the employees.

B. *Necessary*—quality improvement

C. *Economically desirable*
   1. Any changes or additions or improvements to effect cost savings.
   2. Additions for new lines or new products.
   3. Additions for increased capacity.

D. *Other*
   1. General plant improvements desirable from an employee morale standpoint or for reasons of prestige.

An illustrative schedule, using these classifications, which might accompany the budget request is shown in Figure 61. The priority is only suggestive, for in some companies quality improvement might be the only answer to their continued existence.

It is clearly apparent that the "A-1" priority items should have first call on available moneys. The facilities must be kept operating. Of only slightly less urgency are those changes essential to the safety and health of employees. These also could impair the operations if in violation of state or local health and safety codes. Furthermore, every enlightened employer will attempt to take any and all really necessary steps to protect the health and safety of his employees.

Those items in the other groups are perhaps of progressively less urgency, or of a less critical nature. By and large, funds for these groups must come from profits retained in the business, or possibly from other outside sources. Quality improvement may be necessary to retain or increase the sales volume; it may be a required assistance to the sales force. Profitability or savings is the test of that group classified as "economically desirable." Projects involving cost reduction should have a relatively high priority since they are a means of increasing profits. Furthermore, efforts of the engineering or production groups will tend to lag if a top-level priority is not given to such items. This type of project, of course, is a fruitful field for the accountants' know-how.

When the budget request is submitted, it is usually subjected to a critical review by the budget director and budget committee. Tests of the savings or earnings will be made. Quite often priorities will be changed.

Once the annual budget has been approved, it becomes necessary to allocate estimated expenditures by months of the budget period. This data usually can be estimated best by the engineering department which prepared the budget request details in the first instance. An illustrative form is shown in Figure 62. This report applies in situations where projects may be completed over more than one year.

The Appropriation Request. The plant and equipment budget coordinates the allowable disbursements with the available funds. Submission of a budget request for capital assets may or may not be accompanied by a detailed analysis until it is determined that the necessary funds may be forthcoming. Usual practice requires approval of an appropriation request for each specific expenditure for plant or equipment. Such a procedure may be followed for items to be capitalized as well as major repairs or replacements.

The authority required for approval of each specific appropriation request usually depends on the size of the request. A regular ascending scale may be provided:

Less than \$ 1,000—Works Manager
\$ 1,000 to \$ 5,000—General Manager

THE JONES COMPANY
ANNUAL BUDGET REQUEST—PLANT AND EQUIPMENT
For the Year Ending December 31, 1955

			Estimated Cost				Accounting Disposition		Estimated (Annual)		
Item No.	Description	Estimated Completion Date	Labor and Overhead	Material	Sub-contr. Work	Total	Capital	Expense	Savings	Earnings	Comments
	ABSOLUTELY ESSENTIAL										
601	Pneumatic tubes installation.	2/28	$ 5,000	$ 45,000	$10,000	$ 60,000	$ 60,000	$ –	$ –	$ –	Production improbable after 2/1
602	Explosion-proof storage......	3/15	1,000	10,000	10,000	21,000	12,000	9,000	–	–	Now in violation of State Safety Code
603	Fitzpatrick grinder..........	2/15	3,000	90,000	–	93,000	93,000	–	115,000	–	Downtime now 50%
604	Lift truck..................	1/15	–	8,000	–	8,000	8,000	–	–	–	For movement of molding compound
605	Move Recovery Furnace....	4/30	–	–	25,000	25,000	–	25,000	–	–	To incorporate in Ottawa operation
	Subtotal.................		$ 9,000	$153,000	$45,000	$207,000	$173,000	$ 34,000	$115,000	$ –	
	NECESSARY FOR QUALITY IMPROVEMENT										
606	Pilot kettle.................	3/10	$ 2,000	$ 10,000	$ –	$ 12,000	$ 12,000	$ –	$ –	$ –	
607	Laboratory equipment.......	1/31	–	6,000	–	6,000	–	6,000	–	–	
608	"A" filter.................	1/10	500	2,000	–	2,500	2,500	–	–	–	
	Subtotal.................		$ 2,500	$ 18,000	$ –	$ 20,500	$ 14,500	$ 6,000	$ –	$ –	
	ECONOMICALLY DESIRABLE										
609	Urea system................	7/31	$100,000	$135,000	$ –	$235,000	$200,000	$ 35,000	$450,000	$900,000	
610	Drum dumpers..............	4/15	–	25,000	–	25,000	25,000	–	20,000	–	
611	Rosin crusher..............	9/30	20,000	40,000	–	60,000	45,000	15,000	12,500	30,000	
612	Life—"N" system..........	10/15	2,000	5,000	–	7,000	5,000	2,000	7,000	–	
	Subtotal.................		$122,000	$205,000	$ –	$327,000	$275,000	$ 52,000	$489,500	$930,000	
	OTHER										
613	Peoria plant landscaping.....	5/15	$ 3,000	$ 500	$ –	$ 3,500	$ –	$ 3,500	$ –	$ –	
614	Painting of men's lavatory...	1/15	500	100	–	600	–	600	–	–	
615	Replacement of north wall...	6/30	–	–	4,000	4,000	–	4,000	–	–	
	Subtotal.................		$ 3,500	$ 600	$ 4,000	$ 8,100	$ –	$ 8,100	$ –	$ –	
	CONTINGENCY.............		$ –	$ 20,000	$ –	$ 20,000	$ 20,000	$ –	$ –	$ –	
	Grand Total.............		$137,000	$396,600	$49,000	$582,600	$482,500	$100,100	$604,500	$930,000	

FIGURE 61. Plant and Equipment Budget Request

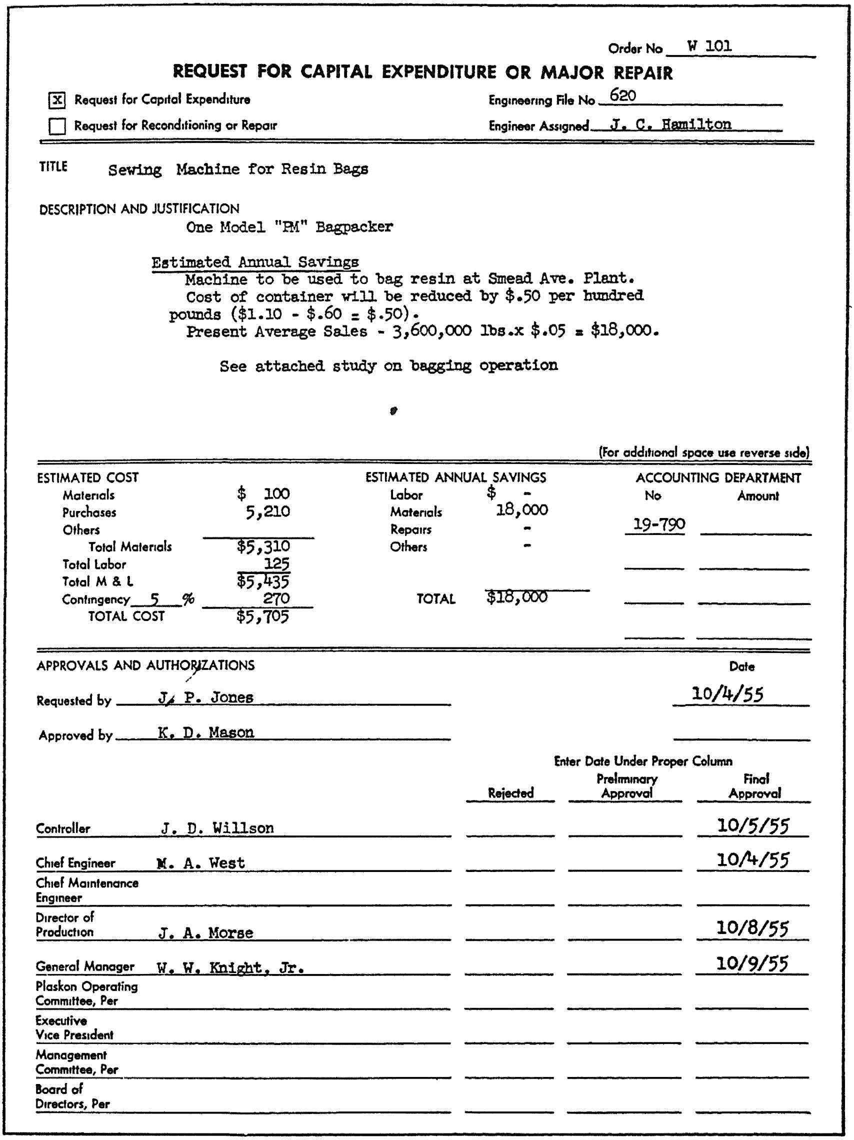
THE AJAX COMPANY
ANNUAL BUDGET—PLANT AND EQUIPMENT
ALLOCATION OF EXPENDITURES BY MONTHS AND QUARTERS
For the Year Ending December 31, 1955

			Deduct			First Quarter						
Project No.	Description	Total Authorization	Prior Year Expenditures	Succeeding Year Expenditures	Current Year Expenditures	Jan.	Feb.	Mar.	Total	Second Quarter	Third Quarter	Fourth Quarter
	AUTHORIZED IN PRIOR YEARS:											
121	Hoboken Warehouse	$ 125,000	$ 90,000	$ –	$ 35,000	$25,000	$ 10,000	$ –	$ 35,000	$ –	$ –	$ –
122	Furfural Plant—A type	990,000	750,000	–	240,000	–	–	–	–	60,000	80,000	100,000
139	Recovery Furnace	275,000	25,000	–	250,000	10,000	30,000	100,000	140,000	100,000	10,000	–
140	R. T. Stokers	68,000	20,000	–	48,000	20,000	20,000	8,000	48,000	–	–	–
	Total	$1,458,000	$885,000	$ –	$ 573,000	$ 55,000	$ 60,000	$108,000	$223,000	$160,000	$ 90,000	$100,000
	AUTHORIZATIONS FOR CURRENT YEAR:											
269	East Texas Plant	$ 125,000	$ –	$ –	$ 125,000	$ –	$ –	$ –	$ –	$125,000	$ –	$ –
270	Glen Avenue Steam Boiler	900,000	–	400,000	500,000	50,000	50,000	100,000	200,000	200,000	100,000	–
273	Bleachery	1,950,000	–	1,200,000	750,000	–	–	–	–	–	350,000	400,000
274	Four trailer tractors -"X" type	200,000	–	–	200,000	–	200,000	–	200,000	–	–	–
275	Lagoons—concrete	90,000	–	–	90,000	–	–	–	–	90,000	–	–
276	Washers	750,000	–	90,000	660,000	–	–	–	–	–	300,000	360,000
	Total	$4,015,000	$ –	$1,690,000	$2,325,000	$ 50,000	$250,000	$100,000	$400,000	$415,000	$750,000	$760,000
	Grand Total	$5,473,000	$885,000	$1,690,000	$2,898,000	$105,000	$310,000	$208,000	$623,000	$575,000	$840,000	$860,000

FIGURE 62. Illustrative Plant and Equipment Budget—Allocation of Expenditures by Quarters

$ 5,000 to $25,000—President or Executive Vice-President
$25,000 to $50,000—Executive Committee
Over $50,000 —Board of Directors

A typical form of appropriation request is illustrated in Figure 63. Generally the request must state in detail the justification, and is sub-



Order No W 101

REQUEST FOR CAPITAL EXPENDITURE OR MAJOR REPAIR

☒ Request for Capital Expenditure — Engineering File No 620
☐ Request for Reconditioning or Repair — Engineer Assigned J. C. Hamilton

TITLE Sewing Machine for Resin Bags

DESCRIPTION AND JUSTIFICATION

One Model "PM" Bagpacker

Estimated Annual Savings
Machine to be used to bag resin at Smead Ave. Plant.
Cost of container will be reduced by $.50 per hundred pounds ($1.10 - $.60 = $.50).
Present Average Sales - 3,600,000 lbs.x $.05 = $18,000.

See attached study on bagging operation

(For additional space use reverse side)

ESTIMATED COST		ESTIMATED ANNUAL SAVINGS		ACCOUNTING DEPARTMENT No	Amount
Materials	$ 100	Labor	$ -		
Purchases	5,210	Materials	18,000	19-790	
Others		Repairs	-		
Total Materials	$5,310	Others	-		
Total Labor	125				
Total M & L	$5,435				
Contingency 5 %	270	TOTAL	$18,000		
TOTAL COST	$5,705				

APPROVALS AND AUTHORIZATIONS

		Date
Requested by	J. P. Jones	10/4/55
Approved by	K. D. Mason	

Enter Date Under Proper Column

		Rejected	Preliminary Approval	Final Approval
Controller	J. D. Willson			10/5/55
Chief Engineer	M. A. West			10/4/55
Chief Maintenance Engineer				
Director of Production	J. A. Morse			10/8/55
General Manager	W. W. Knight, Jr.			10/9/55
Plaskon Operating Committee, Per				
Executive Vice President				
Management Committee, Per				
Board of Directors, Per				

FIGURE 63. Appropriation Request for Capital Expenditure

ject to review by the controller's office as to savings or earnings, where applicable. Distribution of copies of the approved request serves to get the project started.

A necessary control function is a periodic check of the actual disbursements and commitments with the amount of the authorization.

Keeping Expenditures Within Limits. Once the acquisition of fixed assets has been justified, and the appropriation request approved, the next budgetary control problem is that of providing the necessary information so that actual expenditures will be kept within the limits of the appropriation—another purpose of budgeting. An essential step is the establishment of procedures to accumulate actual costs for comparison at frequent intervals with the authorized amounts. But mere accumulation of actual costs is not enough, for commitments can be made far beyond the bounds of the appropriations. It is usually found necessary, therefore, to maintain a record of commitments and periodically report such information as the following:

Amount authorized.
Actual costs incurred.
Commitments.
Unencumbered balance.
Estimated cost to complete.
Indicated overrun or underrun.

Figure 64 is illustrative of this type of report. A commitment register is prepared on the basis of purchase orders issued.

In actual practice one of the problems is getting all commitments recorded. On occasion some enterprising young men incur obligations without the necessary paper work. Sometimes the estimated cost of the article or service is not stated on the purchase order. It requires some persuasion by the controller, and some diligent policing, to correct such poor habits. Ordinarily a fair and reasonable solution can be found.

The same principles and procedures applicable to capital asset expenditures may be used to control major repairs, etc.

Controlling the Cost of Plant and Equipment. Just as the budget aids in the control of manufacturing costs, so it serves to control the cost of plant and equipment construction and purchases. Where careful estimates of what the cost should be are made in advance, they serve as a check on actual costs. Moreover, the advance planning makes it possible to arrange the work at advantageous times when costs will be lowest.

Responsibility for the Plant and Equipment Budget. The responsibility for tentative long-term plans for plant expenditures usually rests upon the chief executive and major functional executives, with

TOLEDO MANUFACTURING COMPANY
APPROPRIATION STATUS REPORT

As of August 31, 1955

Appropriation No.	Description	Work Order No.	Amount Appropriated	Actual Completion Date	Original Estimate	Outstanding Commitments	Actual Expenditures to Date	Estimated Cost to Complete	Indicated Total Cost	(Over) or Under Original Estimate
24	OTTAWA AVENUE PLANT		$ 750,000							
	Buildings and Equipment	241			$670,796.52	$286,672.84	$384,123.68	$ -	$670,796.52	$ -
	Site Clearance	242			13,552.86	-	13,552 86	-	13,552 86	-
	Total Appropriation 24				$684,349.38	$286,672.84	$397,676 54	$ -	$684,349.38	$ -
25	MODIFICATIONS OF OVERHEAD CONVEYOR		35,000							
	Installation Y Building	251			$ 28,353.00	$ 14,533.05	$ 236.39	$13,583.56	$ 28,353.00	$ -
	Others Completed as of 7/31/55				2,990.00	-	4,645 55	-	4,645 55	(1,655.55)
	Total Appropriation 25				$ 31,343.00	$ 14,533.05	$ 4,881.94	$13,583.56	$ 32,998.55	$(1,655.55)
26	MISCELLANEOUS IMPROVEMENTS		183,400							
	Magnesium Pilot Line	261		7/31	$ 8,910.00	$ -	$ 8,551.48	$ -	$ 8,551 48	$ 358.52
	Wrapping Equipment	262		2/28	16,900.00	6 50	14,122 52	-	14,129.02	2,770.98
	Roll Mill—Design and Install—A.C. Plant	263			11,680.00	8,944 00	154 00	2,582.00	11,680 00	-
	Intercommunication System	264			24,974.00	4,794.57	20,179.43	-	24,974.00	-
	Move Hydraulic Press and Install in Y Building	265		5/31	1,155.50	79.15	926 68	-	1,005.83	149.67
	Design and Install Air Conditioning Unit in Y Building	266			9,725 00	750.00	8,626 84	348.16	9,725 00	-
	Changes and Modifications in Paint Room	267		5/31	30,115.00	29 89	26,664 06	-	26,693.95	3,421.05
	Buggy Scales	268			11,275 00	212 20	10,158.39	904.41	11,275 00	-
	Tote Boxes—A.C. Plant	269		7/31	3,597.00	340.57	3,198 86	-	3,539.43	57.57
	Prepare Annealing Oven for Production Use	270			7,700.00	1,290 03	6,202.29	207.68	7,700.00	-
	Move Electric Furnaces to A.C. Plant	271			3,585.00	2,989.20	-	595.80	3,585.00	-
	Lift truck with Exide batteries and Battery Charger	272			30,486.00	21,670.19	2,737.83	6,077.98	30,486.00	-
	Purchase and Install 100 HP motor in Y Building	273		7/31	4,692 00	424 00	3,701.97	-	4,125.97	566 03
	Others Completed as of 7/31/55				3,701.00	-	2,482.18	-	2,482.18	1,218.82
	Total Appropriation 26				$168,495.50	$ 41,530 30	$107,706.53	$10,716.03	$159,952.86	$ 8,542.64
29	ALUMINUM EXPERIMENTAL UNIT		50,000							
	Construction of Unit	291			$ 50,000.00	$ 5,533 34	$ 15,385.04	$29,081.62	$ 50,000.00	$ -
	Total Appropriation 29				$ 50,000 00	$ 5,533.34	$ 15,385 04	$29,081.62	$ 50,000.00	$ -
	Grand Total		$1,018,400		$934,187.88	$348,269.53	$525,650.05	$53,381.21	$927,300.79	$ 6,887.09

Issued by Accounting Department—September 12, 1955.

FIGURE 64. Report on Status of Capital Expenditures Under Appropriation

their findings subject to review by the board of directors. Such long-term expenditures are usually not definitely authorized but constitute a formal statement of policy relative to plant maintenance and expansion and the direction which the latter is expected to take.

The method of developing and approving the plans for plant expenditures to be made during the immediate budget period varies widely in different industries and concerns, although the general pattern is somewhat uniform. Usually minor production executives are encouraged to make recommendations as to needed repairs and replacements and desirable additions. These pertain especially to expenditures needed to keep the plant in good repair, to reduce costs, and to improve the product. In addition, many concerns require regular reports from department heads as to the present condition of the plant and equipment items within their respective departments, and needed repairs and replacements. These recommendations and reports are then reviewed and revised by superior officers and sometimes classified according to their degree of necessity or urgency. Such revised statements then serve as a basis for recommendations to the chief executive and ultimately to the board of directors. Once the budget is approved, the chief production executive or chief plant engineer, together with designated subordinates, is charged with the responsibility for its execution.

Usually the responsibility of the controller or budget director includes the review of the justification from the savings viewpoint, the effect on financial position, and the task of following through on the budget to see that it is properly incorporated in the cash budget, statement of financial condition, etc.

An Illustrative Procedure.[2] Outlined below is the procedure followed in a medium-sized company in securing capital asset replacements or additions. Quite obviously, the method of securing approvals and exercising control may vary in different firms.

1. *Origination of the idea.* Any one may create an idea—a factory hourly laborer, a foreman, an engineer, a time study man. It may be submitted as part of a suggestion plan, or simply in an effort to improve methods. Preferably the matter should be put in writing, with sketches, etc.

2. *Preliminary review.* The idea is forwarded to the industrial engineering department where it is given a preliminary review by a methods man. Rough estimates are made as to the apparent savings or other benefits offered. If the idea seems to have possibilities, it is

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[2] *Ibid.*, pp. 284-87.

reviewed more thoroughly, and outline drawings and specifications are prepared and forwarded to the plant engineering department.

3. *Determination of cost.* The plant engineering department reviews the plans and specifications and prepares an estimate of cost. Bids may be secured.

4. *Budget approval and request for appropriation.* The estimated costs of the asset, together with estimated savings, are forwarded to the works manager. If he approves, he uses the estimate as the basis for securing a budget approval, along with other projects, on a form similar to Figure 63. At the same time a request for appropriation is prepared, with the exception of the part pertaining to annual savings, and is sent to the accounting department for review.

5. *Analysis by accounting.* The controller's representative reviews the proposal and calculates the likely annual savings. In doing this, he makes a thorough review of estimated costs submitted by the industrial engineers. Typical points covered include:

a) A review of the reasonableness of the man power requirements by discussion with the engineers. This means "getting behind the figures."
b) A review of the wage rates and probability of wage increases.
c) A check into the operating requirements to review probability of overtime.
d) A review of probable incentive earnings, if any.
e) Calculation of all nonwage payments or benefits for the workers—vacations, health and accident insurance, social security taxes, etc.
f) Review of maintenance problems and possible expense.
g) Review of every other overhead account to ascertain that all costs have been included, and that the amounts appear reasonable, based on comparative data, if available.
h) Review of material costs, with particular reference to
    (1) Present prices and likelihood of increases.
    (2) Availability of materials, and cost of possible substitutes.
    (3) Expected scrap or off-grade losses, in comparison with present experience.
i) Review of expected production per hour, and comparison with similar operations in the plant.

After such a detailed analysis, the section on anual savings can be calculated, observing the principles mentioned earlier.

6. *Approval of the request for appropriation.* If the review indicates the necessary savings, it is approved by the controller, forwarded to the works manager for his approval, and then forwarded to the general manager for the required approval. If the proposal does not

warrant approval, it may be returned to the works manager without signature, and with reasons for nonapproval. If all those concerned approve, the request for appropriation is forwarded to the controller for distribution. Copies are distributed for action as follows:

1. To general manager.
2-3. To engineering department for authority to commence project.
4. To purchasing department as authority to honor purchase requisitions against it.
5. To cost accounting for setting up necessary records and accumulating costs.
6. To general accounting in order to permit payment of invoices and to set up property record cards, when necessary.

7. *Control over expenditures.* Periodic reports are forwarded and actual expenditures and commitments compared with authorized amounts, as in Figure 64. Indication of over-runs is the signal to hold further commitments until a supplemental appropriation request is approved or a review made for possible modifications to reduce the cost.

8. *Close-out and follow-up.* When the project is completed, the third copy of the approved request is forwarded to accounting as a signal to close out the work order. The final report indicates the project to be completed, with total actual costs shown. Sometime later the installation is checked and a report submitted on actual savings vs. the estimated.

Unused Plant Capacity. Closely related to budgetary control from both an operating as well as an investment viewpoint is the matter of unused plant capacity. In every business it can reasonably be expected that some loss will be sustained because of idle facilities and/or idle workers. The objective is to inform management of these losses and place responsibility in an attempt to eliminate the avoidable and unnecessary costs. But aside from stimulating action to eliminate the causes of short-term idleness, such information may be a guide in determining whether or not additional facilities are necessary. Also, such knowledge may encourage disposal of any permanently excess equipment.

Losses resulting from unused plant facilities are not limited to the fixed charges of depreciation, property taxes, and insurance. Very often idle equipment also results in lost labor, power, and light, as well as other continuing overhead expenses, to say nothing of start-up time and lost income from lost sales.

Causes of idle time may be threefold:

1. Those controllable by the production staff. These may result from:
   - *a*) Poor planning by the foreman or other production department staff member.
   - *b*) Lack of material.
   - *c*) Lack of tools or other equipment.
   - *d*) Lack of power.
   - *e*) Machine breakdown.
   - *f*) Improper supervision or instructions, etc.
2. Those resulting from administrative decisions. For example, a decision to build an addition may force the temporary shutdown of other facilities. Again, management may decide to add equipment for later use. Here certain idle plant costs may be incurred until the expected demand develops.
3. Those arising from economic causes. Included are the causes beyond the control of management, such as cyclical or seasonal demand. In somewhat the same class is idle time resulting from excess capacity in the industry. The effect of such conditions may be partially offset by efficient sales planning and aggressive sales effort.

The cause of idle time is important in determining the proper accounting treatment. Where idle facilities result from economic causes, or are otherwise highly abnormal—such as a prolonged strike, it may be desirable for the controller to have such costs segregated and handled as a separate charge in the statement of income and expense. Such expenses should not be included in inventory or cost of sales.

Some companies isolate in the manufacturing expenses the cost of idle time which is controllable by the production staff. In other cases, a simple reporting of the hours is all that is necessary. Where it is desirable to charge the costs of idle time to a separate account the segregation is simple through a comparison of normal and actual hours, and the use of standard rates.

Plant and Equipment Records. Adequate plant and equipment records are an important adjunct to effective budgetary control. They provide a convenient source of information not only for planning and control purposes but also as related to insurance and tax matters. Whether the records are used to check the estimated costs of replacement equipment requested for an appropriation, or to determine the correct distribution of depreciation and property tax and insurance costs for budgetary purposes, accurate data are necessary. Preferably there should be a separate record of each item, or group of similar items, containing complete information such as:

Description, identification, and location.
Date acquired.
Life expectancy in terms of production and years.
Cost.
Estimated scrap value and cost of removal.
Depreciation rate.
Yearly depreciation taken and cumulative reserve for depreciation.
Record of production.
Record of productive and idle hours.
Record of repair costs.
Data relative to appraisals.

Chapter 23

THE FINANCIAL BUDGET

Financial Budget Defined. Many companies have well developed methods or techniques for the budgetary control of operations, whether in the factory, on the selling front, in the laboratory, or in the office. Yet often these same businesses have not planned on a comparable basis for the cash requirements, or working capital. The result is oftentimes a serious unbalance between operating plans and financial sufficiency. Many cases of business failure undoubtedly could have been avoided had the need for additional capital been foreseen and plans made to secure it in accordance with sound financial practice.

The financial budget can be regarded as the climax of all the other budgetary activities in that it summarizes and brings together the final results of these individual operating and other budgets. As herein used, the financial budget refers to the plan for the procurement and use of the more liquid resources of the business, and the maintenance of a sound financial structure. It includes consideration of cash flow, adequacy of working capital, and preferred means of providing necessary capital.

Basic Financial Policy Required. Financial and operating budgets are interdependent. Operations must be planned within the limits of available funds and funds must be provided to finance the operating program. The degree of dependence of one factor upon the other varies considerably in different cases. It is not uncommon to find a concern in which the controlling interests do not wish to make additional investment for the time being, nor do they wish to extend the borrowings. Instead, they desire to restrict operations to those which can be safely carried on within the present financial limits. In other cases it is the policy to supply such funds as are needed to provide for any increase in operations which gives reasonable promise of being profitable. In still other concerns the financial limits may be established somewhere between these two extremes.

A basic financial policy must be established before the operating and plant budgets can be developed. The latter then serve as a basis for the detailed financial budget.

Purpose of the Financial Budget. The financial budget serves the following purposes:

1. It provides an estimate of the cash receipts and disbursements which will result from the budgeted operation, and the cash balances which will be available periodically throughout the budget period.
2. It indicates the amount of additional funds which will be needed and the time and duration of such needs.
3. It resolves the budgeted operations into their periodic profit or loss results as a final test of the expediency of the program.
4. It presents approximate periodic statements of financial condition as they will appear if the operating and financial programs are executed as planned; and thereby provides a basis for testing the program by financial standards.

The above purposes of financial budgeting pertain especially to the short-term financial plans or those of the immediate budget period. These can be developed with reasonable degree of exactness, although they are subject to revision resulting from important changes in the operating program. There is also the problem of developing a financial program to conform to the long-term expansion program of the business. This must be tentative in nature and subject to periodic revision; nevertheless, it is highly desirable to look ahead to future financial needs of the business and mold these into a fairly definite program. Are additional funds to be accumulated from earnings, bond issues, stock offerings, or a combination of these sources? When and for what duration will they be needed? What type of securities will best meet the needs? Such long-term planning is particularly important now in view of increased governmental regulation of corporate affairs and the effect of the financial structure on the tax burden. Moreover, such planning permits financial executives to arrange for the funds on the most favorable market.

The Cash Budget. The cash budget is one part—and an important part—of the financial budget. It may be defined as a projection or estimate of the anticipated cash receipts and disbursements, and the resulting cash balance, within a specified period. It is a necessary function in any well-managed plan of cash administration. The basic purpose of this budget is to see that the business will have cash when needed and will not utilize cash funds in excess of those needed. More specifically its purposes are:

1. To provide for seasonal fluctuations in business which make heavy demands on funds to carry large inventories, receivables, etc.
2. To indicate well in advance when additional cash must be supplied from loans or other sources and thereby aid the financial executive in developing his plans to the best advantage.
3. To indicate the length of time that funds will be needed and thereby assist in arranging loans.
4. To assist the financial executive in having funds available to meet maturing obligations, taxes, dividends, interest, plant expansion, etc.
5. To assist in having cash available for taking advantage of cash discounts and forward purchases on advantageous markets.
6. To aid in securing credit from commercial banks. The bank is more likely to loan funds where a definite plan has been prepared indicating when and how the funds are to be repaid.
7. To indicate the amount of funds available for investment, when available, and for what duration of time.

The cash forecast is, or should be, more than a mere mechanical gathering together of the cash needs or cash receipts from the various expense, income, and plant and equipment budgets.

The proper method of developing the cash budget is to translate the operating and plant budgets into their resulting cash receipts and disbursements, and to proceed from that point with such adjustments and revisions in the program as will provide a safe course.

Cash Forecasting Methods. At least three methods have been developed for constructing a cash forecast. While the end product is the estimated cash balance, the methods differ chiefly as to the starting point of the forecast and the detail made available. The three techniques may be outlined as follows:

1. *Direct estimate of cash receipts and disbursements.* This is a detailed forecast of each cost element or function involving cash. It it essentially a projection of the cash records. Such a method is the one most commonly used in business and is quite essential to giving a complete picture of the swings or gyrations in both receipts and disbursements. It is particularly applicable to those concerns which are subject to wide variations in activity. Since this is the method most commonly used, it is discussed in detail in the next section.

2. *Adjusted net income method.* As the name implies, the starting point for this procedure is the estimated income and expense statement. This projected net income is adjusted for all noncash transactions to arrive at the cash income or loss; and is further adjusted for cash transactions which arise because of nonoperating balance sheet

THE CALIFORNIA MANUFACTURING COMPANY
CASH FORECAST
For the Year Ending December 31, 1955

	January	February	March	December	Total
CASH RECEIPTS					
Net Income	$124,000	$119,000	$132,000	$ 143,000	$1,920,000
Add:					
Depreciation	10,000	10,000	10,000	10,000	120,000
Prepaid Insurance	2,500	2,500	2,500	2,500	30,000
Accrued Taxes					
Federal Income	101,000	97,000	108,000	117,000	1,570,000
Real and Personal	5,000	5,000	5,000	5,000	60,000
Accrued Advertising	6,000	6,000	6,000	6,000	72,000
Collections Over (Under) Sales	10,000	20,000	(20,000)	(5,000)	(10,000)
Sale of Capital Assets	-	1,000	5,000	-	12,000
Sale of Securities	-	-	700,000	-	790,000
Total Cash Receipts	$258,500	$260,500	$948,500	$ 278,500	$4,564,000
CASH DISBURSEMENTS					
Accrued Taxes					
Federal Income	$ -	$ -	$930,000	$ -	$ 930,000
Real and Personal	-	60,000	-	-	60,000
Prepaid Insurance	30,000	-	-	-	30,000
Accrued Advertising	-	8,000	12,000	20,000	65,000
Capital Assets	-	-	20,000	90,000	140,000
Investments	50,000	350,000	-	100,000	1,900,000
Dividends Paid	127,000	-	-	-	487,000
(Increase) or Decrease in Accounts Payable	(10,000)	(5,000)	(20,000)	40,000	(50,000)
Total Cash Disbursements	$197,000	$413,000	$942,000	$ 250,000	$3,562,000
Gain or (Loss) in Cash	$ 61,500	$(152,500)	$ 6,500	$ 28,500	$1,002,000
SUMMARY OF CASH FORECAST					
Cash on Hand—Beginning	$572,000	$633,500	$481,000	$1,545,500	$ 572,000
Gain or (Loss) in Cash	61,500	(152,500)	6,500	28,500	1,002,000
Short-Term Loans	-	-	-	-	-
Cash on Hand—End of Period	$633,500	$481,000	$487,500	$1,574,000	$1,574,000

FIGURE 65. Cash Forecast Prepared by "Net Income" Method

changes. A work sheet showing the general method is illustrated in Figure 65.

It will be observed that since net income is used, the true extent of the gross cash receipts or disbursements is not known. Where a company must work on rather close cash margins, this method probably will not meet the needs. It is applicable chiefly where sales volume is relatively stable and the out-of-pocket costs are fairly constant in relation to sales.

3. *Working capital differentials.* By this method the net working capital at the beginning of each month is adjusted by estimated net income and other receipts and disbursements to arrive at the estimated working capital at the end of each month. From this are deducted the required working capital, excluding cash, and the standard cash balance, to arrive at the amount of cash available for deposit and investment.

Such an approach has been used when standard valuations required for receivables, inventories, and other working capital at various sales volumes have been determined; and when the major objective is the reinvestment of surplus funds.

Estimating Cash Receipts—Direct Estimate Method. Cash receipts of the typical industrial and trading company come from cash sales, collections on accounts and notes, interest, dividends, rent, sales of capital items, sales of investments, bank loans, new financing, and a few miscellaneous sources such as claims, refunds, etc. With the exception of cash sales and collections, these can be predicted with reasonable accuracy through an analysis of past experience, and taking into account known changes. Cash sales should be taken from the sales budget. The estimate of collections should be based upon the sales budget and company's experience in making collections.

With concerns whose sales are made largely on account, the collection experience should be ascertained with considerable care. To illustrate, assume that March net account sales are actually collected as follows:

In March	6.4%
In April	80.1
In May	8.5
In June	3.6
Cash discounts taken	1.1
Loss from bad debts	0.3
	100.0%

If now the same experience is recorded for each month of the year, it is possible to resolve the sales estimates into a collection budget. This may be illustrated as follows:

ESTIMATE OF CASH COLLECTIONS TO BE MADE IN MARCH, FROM ACCOUNT SALES

Percentage Based on Past Experience		
3.7%	of December net charge sales of $300,000	$ 11,100
8.4%	of January net charge sales of $270,000	22,680
81.0%	of February net charge sales of $250,000	202,500
6.4%	of March net charge sales of $310,000	19,840
	Total collections for March	$256,120

Past experience shows that 3.7% of December charge sales are collected in March; likewise, 8.4% of January sales, 81% of February sales, and 6.4% of March sales. Using this approach, a supporting work sheet might appear as in Figure 66.

It is sometimes desirable to develop this experience separately for different classes of goods, different classes of customers, or different geographical areas. Thus a separation may be made between industrial and jobber customers.

While it requires some extra work on the part of the accounting department to secure this information, it need not as a rule be done continuously. Once the experience figures are ascertained they may be tested periodically. Moreover, this information is extremely useful to the credit department in testing its own performance.

Even when the above experience is available, some degree of judgment must be exercised. The trend of general business conditions has a material effect on collections and may require some modification of past experience. Also, effect must be given to any changes in credit terms or credit enforcement policy. The estimates as obtained by the method above should be reviewed by the credit and collection executives and revised when in their judgment they are not reliable.

The cash receipts each month, or other period used in the cash forecast, may be summarized by item or source on a separate schedule, depending on the amount of refinement or detail desired. Typically, however, the cash receipt estimates would be included with the cash disbursements in a single statement showing the cash movement. An illustrative report is shown in Figure 67.

It should be apparent that a cash statement would include strictly cash items, and not accruals.

Estimating Cash Disbursements—Direct Method. In the typical industrial and commercial firms, cash disbursements are made principally for these items: payroll, material and merchandise, insurance, taxes, interest, other operating expenses, dividends, purchase of plant

THE GAS EQUIPMENT COMPANY
WORKSHEET FOR COLLECTIONS ON ACCOUNTS RECEIVABLE
For the Year Ending December 31, 1956

Description	Amount	Provision for Bad Debts	Balance to Be Collected	Period of Collection							Balance 12/31/56
				First Quarter				Second Quarter	Third Quarter	Fourth Quarter	
				January	February	March	Total				
Accounts Receivable											
Balance 12/31/55 (net)											
August Sales Bal...	$ 5,000		$ 5,000	$ 5,000	$ –	$ –	$ 5,000				
September " " ..	10,000		10,000	5,000	5,000	–	10,000				
October " " ..	12,000		12,000	4,000	4,000	4,000	12,000				
November " " ..	13,000		13,000	5,000	4,000	3,000	12,000	$ 1,000			
December " " ..	50,000		50,000	40,000	3,000	3,000	46,000	4,000			
	$ 90,000		$ 90,000								
Forecasted Sales—1956											
January	40,000	$ 120	39,880	2,000	32,000	3,300	37,300	2,580			
February	50,000	150	49,850	–	3,000	40,000	43,000	5,300	$ 1,550		
March	60,000	180	59,820	–	–	3,700	3,700	54,600	1,520		
April	80,000	240	79,760	–	–	–	–	76,000	3,760		
May	90,000	270	89,730	–	–	–	–	77,400	10,000	$ 2,330	
June	120,000	360	119,640	–	–	–	–	7,200	110,400	2,040	
July	120,000	360	119,640	–	–	–	–	–	114,000	5,640	
August	140,000	420	139,580	–	–	–	–	–	120,400	19,180	
September	150,000	450	149,550	–	–	–	–	–	9,000	138,000	$ 2,550
October	130,000	390	129,610	–	–	–	–	–	–	123,500	6,110
November	100,000	300	99,700	–	–	–	–	–	–	86,000	13,700
December	80,000	240	79,760	–	–	–	–	–	–	4,800	74,960
Total	$1,250,000	$3,480	$1,246,520	$61,000	$51,000	$57,000	$169,000	$228,080	$370,630	$381,490	$97,320
Less: Accounts Receivable 12/31/56			97,320								
Gross Collections			$1,149,200								
Less: Cash Discounts			11,492	610	510	570	1,690	2,281	3,706	3,815	
Estimated Collections			$1,137,708	$60,390	$50,490	$56,430	$167,310	$225,799	$366,924	$377,675	

FIGURE 66. Worksheet for Collections on Accounts Receivable

ECONOMY COMPANY
STATEMENT OF ESTIMATED CASH RECEIPTS AND DISBURSEMENTS
For the Fiscal Year 1954
(000's Omitted)

Description	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
CASH AT BEGINNING OF PERIOD	$1,330	$ 756	$ 842	$ 617	$ 701	$1,154	$1,182	$1,853	$2,819	$3,433	$3,132	$2,339	$ 1,330
CASH RECEIPTS													
Collection on Account	$2,985	$3,255	$3,975	$4,081	$4,235	$4,288	$4,240	$4,218	$4,256	$4,226	$4,100	$4,087	$47,946
Dividends—Subsidiaries	–	–	–	–	437	436	873	436	–	–	–	–	2,182
Bond Interest—Subsidiaries					VIA INTERCOMPANY ACCOUNT								
Short Term Notes	–	–	600	–	–	–	–	–	–	–	–	–	600
Miscellaneous	25	38	25	55	20	20	20	20	20	20	20	20	303
Total Cash Receipts...........	$3,010	$3,293	$4,600	$4,136	$4,692	$4,744	$5,133	$4,674	$4,276	$4,246	$4,120	$4,107	$51,031
Total Cash Available	$4,340	$4,049	$5,442	$4,753	$5,393	$5,898	$6,315	$6,527	$7,095	$7,679	$7,252	$6,446	$52,361
CASH DISBURSEMENTS													
Accounts Payable	$1,972	$2,117	$2,200	$2,254	$1,846	$2,003	$2,059	$1,926	$1,906	$2,004	$1,937	$1,865	$24,089
Payrolls—Net	1,096	1,067	1,034	1,001	1,018	1,034	1,083	1,167	1,307	1,351	1,296	1,272	13,726
Subsidiaries	210	–	366	367	367	367	239	368	368	369	366	366	3,753
Dividends—Preferred Stock	–	–	–	238	–	–	236	–	–	.234	–	–	708
Interest—Mortgage Bonds	–	–	–	–	238	–	–	–	–	–	238	–	476
Short Term Notes	–	–	–	–	700	500	600	–	–	–	–	–	1,800
Taxes—Federal Income	18	–	389	–	–	389	–	–	–	97	–	–	893
" —Withholding and S.S.	167	–	360	157	–	352	158	162	–	400	177	–	1,933
" —Real Estate	–	–	–	–	–	–	–	–	–	20	20	55	95
Funded Debt	–	–	–	–	–	–	–	–	–	–	800	–	800
Pension Plan	–	–	456	–	–	–	–	–	–	–	–	–	456
Purchases—$5 Pfd. Stock	78	–	–	–	48	48	48	49	48	49	48	48	464
Other Accruals	43	23	20	35	22	23	39	36	33	23	31	44	372
Total Cash Disbursements	$3,584	$3,207	$4,825	$4,052	$4,239	$4,716	$4,462	$3,708	$3,662	$4,547	$4,913	$3,650	$49,565
CASH AT END OF PERIOD	$ 756	$ 842	$ 617	$ 701	$1,154	$1,182	$1,853	$2,819	$3,433	$3,132	$2,339	$2,796	$ 2,796

FIGURE 67. Illustrative Statement of Estimated Cash Receipts and Disbursements

and equipment, repayment of loans, and retirement of stock. If a complete operating budget is available, together with the plant and equipment budget, then little difficulty should be experienced in estimating the amount of cash needed and when it will be needed.

Some general comments on the approach may be suggested. The various operating budgets will provide much of the information. However, it is often helpful to analyze the principal accounts in the statement of financial condition, and cross-reference them to the operating budgets. Prepaid insurance is an example. The estimated analysis should be prepared (because it will serve as a check on the item in the statement of estimated financial condition) and "tied into" the operating or other budget. Past experience and records will indicate when cash payments must be made, so that the analysis will provide the data for the cash statement. Figure 68 is illustrative. The disposition of the various write-offs are shown and the letters or numbers circled are cross-references to other budget schedules. Certain short-cuts can be taken when procedures are well established.

For some types of disbursements, it will be found desirable to summarize the like items in each of the budgets. For example, if the payrolls (net) are to be shown in the cash disbursements statement, the

THE JONES COMPANY
ANALYSIS OF PREPAID INSURANCE
Forecast 1955

Month	Beginning Balance	Cash Payments (A)	Write-offs				Ending Balance
			Manufacturing (21)	Selling (25)	Research (27)	Total	
Jan.	$100,000	$ –	$ 6,000	$ 2,000	$ 1,000	$ 9,000	$ 91,000
Feb.	91,000	20,000	6,000	2,000	1,000	9,000	102,000
Mar.	102,000	–	10,000	2,000	1,000	13,000	89,000
Apr.	89,000	–	10,000	2,000	1,000	13,000	76,000
May	76,000	–	10,000	2,000	1,000	13,000	63,000
June	63,000	–	10,000	2,000	1,000	13,000	50,000
July	50,000	–	10,000	3,000	2,000	15,000	35,000
Aug.	35,000	–	10,000	3,000	2,000	15,000	20,000
Sept.	20,000	–	10,000	3,000	2,000	15,000	5,000
Oct.	5,000	100,000	10,000	2,000	2,000	14,000	91,000
Nov.	91,000	–	10,000	2,000	1,000	13,000	78,000
Dec.	78,000	40,000	10,000	2,000	1,000	13,000	105,000
Total ...	$100,000	$160,000	$112,000	$27,000	$16,000	$155,000	$105,000

FIGURE 68. Analysis of Prepaid Insurance Account for Cash Forecast Purposes

THE ILLUSTRATIVE COMPANY
WORKSHEET FOR COMPUTATION OF NET PAYROLL

For the year 1956

Month	Beginning Accrual	Monthly Gross Payroll	Ending Accrual	Gross Payroll Paid	Deductions					Net Payroll
					Federal Withholding	F.O.A.B.	Pension	Misc.	Total	
Jan.	$10,000	$ 80,000	$10,000	$ 80,000	$ 8,000	$ 1,600	$ 4,000	$ 1,000	$ 14,600	$ 65,400
Feb.	10,000	90,000	12,000	88,000	8,800	1,700	4,000	1,000	15,500	72,500
Mar.	12,000	100,000	15,000	97,000	9,700	1,800	4,000	1,000	16,500	80,500
Apr.	15,000	120,000	20,000	115,000	11,500	2,300	4,000	1,000	18,800	96,200
May	20,000	120,000	20,000	120,000	12,000	2,200	5,000	1,000	20,200	99,800
June	20,000	150,000	30,000	140,000	14,000	2,300	5,000	1,000	22,300	117,700
July	30,000	150,000	30,000	150,000	15,000	2,600	5,000	1,000	23,600	126,400
Aug.	30,000	130,000	25,000	135,000	13,500	2,400	5,000	1,000	21,900	113,100
Sept.	25,000	110,000	20,000	115,000	11,500	2,100	5,000	1,000	19,600	95,400
Oct.	20,000	100,000	15,000	105,000	10,500	1,900	5,500	1,000	18,900	86,100
Nov.	15,000	90,000	12,000	93,000	9,300	1,100	5,500	1,000	16,900	76,100
Dec.	12,000	80,000	10,000	82,000	8,200	800	5,500	1,000	15,500	66,500
Total	$10,000	$1,320,000	$10,000	$1,320,000	$132,000	$22,800	$57,500	$12,000	$224,300	$1,095,700

FIG. 69. Worksheet for Computation of Net Payroll

various payrolls should be summarized, deductions estimated and net payroll determined. This same analysis will serve for the accrued payroll account. Knowledge of the pay practice, and reference to the calendar will indicate when payrolls should be paid, and what must be accrued. A form of worksheet is shown in Figure 69. Supporting this is the summary of gross payrolls secured from the budget for manufacturing costs, selling expenses, etc.

Experience will indicate the lag from time of incurrence of obligations and cash payment therefor. For example, a month may lapse, on the average, between receipt of raw materials and payment. Therefore, the cash payment for this item would represent the purchases for the preceding month, less the estimated cash discount.

Sometimes it is found convenient to begin with the operating expense budgets, and deduct for noncash items, accruals, and prepayments. In any event, the same answer should be secured as when approaching the problem from the viewpoint of the asset and liability accounts.

Cash requirements for plant and equipment expenditures can be ascertained from the plant budget. While few such purchases are made for cash, the time of the cash requirements can be closely approximated. No difficulty arises with such items as purchases of investments, reduction of loans, contributions to sinking funds, retirement of stock, and dividend payments. The cash requirements for such items either are definite and fixed by contractual obligation or arise from direct action of the board of directors. The former is a known factor and the latter must be estimated by the board itself or by the chief executives in anticipation of board action.

The cash budget is usually prepared first without the inclusion of such items as:

Receipts from bank loans.
Receipts from sales of investments.
Disbursements for investment purchases.
Disbursements for voluntary redemption of bonds.
Disbursements for voluntary retirement of stocks.
Disbursements for dividends.

After it is apparent what cash will be available or what shortages will exist as a result of other cash transactions, the financial executive or board of directors formulate the company policy relative to the above items which are then included to complete the cash budget.

Form of the Cash Budget. No form of cash budget can be presented which is widely applicable. The type of presentation must be adapted to fit the individual requirements. For instance, different analyses of each disbursement will apply in various situations. Generally speaking, the principle to follow is that of setting out separately those types of items which are most significant. A form which the authors have found practical is shown in Figure 67.

Length of Cash Budget Period. Concerns which are operating on comparatively small cash margins may find it necessary to break down the cash budget into short periods; thus, the budget may be prepared for a period of two or three months in advance and broken down into daily or weekly periods. Other concerns, with ample cash reserves, may find it satisfactory to develop the cash budget on a monthly basis for six months or a year in advance. On the whole, the cash budget must be resolved into shorter periods than is required for the budgets of operations.

Emphasis in the discussion of the cash budget has been on what might be called the short-term forecast—that covering a period of one year or less. Yet, long-term cash forecasting is very often necessary and desirable, perhaps covering a term of three, five or ten years. To be sure, such statements would be used principally at the top executive level in formulating over-all financial planning. But such a projection is necessary. It is needed for the proper planning of capital expansion, or the proper channeling of cash, or as a guide in incurring long-term debt. Such planning can be the basis for an intelligent and stable dividend policy; or the basis for the advantageous sale of new securities.

When such long-term cash forecasts are made, they necessarily avoid some of the detail of the shorter term statements, and are more tentative in nature.

Enforcing the Cash Budget. The cash budget cannot be enforced independently of other budgets of which it is a consequence. If sales, collections, inventories, costs, or plant expenditures fail to conform to their respective budgets, the effect will soon be felt in the cash position, either favorably or unfavorably. The cash budget thereby serves as a secondary check on the enforcement of the entire budget program. If other operations reasonably conform to their respective budgets, the financial executive can be held strictly responsible for the maintenance of the cash position as planned.

Of course, some companies extend the comparison of budget and actual performance to the cash account. There would seem to be two advantages to such a procedure: (*a*) An additional check is provided as to items which might need corrective action, viz., slow collections, and (*b*) continued differences would provide a clue for strengthening the forecasting methods.

Supplying the Cash Requirements. The cash budget ordinarily will indicate the amount of additional cash needed, if any, and the duration of the need. It is then incumbent upon the treasurer or chief financial officer to arrange for the needed funds on the most advantageous terms. When these funds are secured from bank loans, the cash budget will be found useful in presenting the company's request to the banks. When the need extends beyond the safe limits of current borrowing, the entire matter of financial policy is involved. Strange as it may seem, many concerns fail to establish definite financial standards or policies which serve as a safe guide to their long-term financial plans. Too often there is the feeling that, if only volume can be secured and operations gradually expanded, finances will take care of themselves. The safe plan is to set forth a definite policy based upon tested financial standards and develop the financial program in accordance therewith.

Working Capital Requirements. The statement was made in the preceding section that the cash budget would indicate the additional cash needs. Such a comment needs amplification. To be sure, if an actual cash deficit is predicted, a requirement of other cash is evident. But how much cash should be secured—$100,000 or $1,000,000? What means is available for determining the necessary cash balance? What tests of cash adequacy can be made, particularly under conditions of changing volume? Moreover, under these circumstances, what change should take place in total working capital? It will bear repeating that the cash budget—indeed, the consideration of working capital itself—is no mere mechanical assembly of the other budgets, viz., operating and plant and equipment. Working capital is subject to budgetary control in the sense that a proper relationship must be determined and planned as between working capital and operations.

The objective of the working capital budget is to secure effective utilization of the investment. Such utilization may be measured by the rate of turnover as measured against sales or cost of sales. This is the key to the method. Scatter charts may be used to learn the behavior of working capital in relation to volume. It is often found desirable to refine the relationship and establish separate standards for each element, particularly cash, receivables, and inventory. The technique then provides the necessary information for any volume of business.

Working Capital—Details of the Technique. Comments on each of the major elements of working capital are as follows:

Cash. Generally, past experience will show that a given cash balance is necessary to promptly meet obligations, and avoid undue transfers between bank accounts. A relationship may be determined with a base such as sales, although cash requirements do not increase in proportion to sales. In addition to the volume factor, consideration must be given to maintaining satisfactory balances in terms of bank relations, etc.

Accounts Receivable. A scatter chart will indicate a standard relationship to sales. For example, it might be determined that the balance should represent 1.33 of a month's sales.

Inventories. Here, also, a fixed and variable element may be established through the use of a scatter chart. It is to be noted that if a turnover rate is used, the turnover tends to decrease as the sales volume decreases. In other words, the rate of turnover is not constant.

Accounts Payable. These items usually bear a direct relationship to material purchases.

Accrued Payrolls. Similarly, a relationship may be found between this liability and the cost of goods sold, sales, or cost of goods manufactured.

Federal Income Taxes. These can be calculated as a per cent of the expected operating profit at selected volume levels.

The chief point to be made is that consideration must be given to adequately planned working capital. A schedule of standard working capital requirements is shown in Figure 70.

A budget for working capital might appear as in Figure 71. When the determination has been made as to the most suitable means of securing the necessary capital, then the budgeted statement of income and expense, as well as statement of financial condition, should be revised to reflect the plan.

Statement of Estimated Income and Expense. The operating and other budgets discussed in the preceding part of this volume are for the purpose, among other things, of assisting in the control of the activities or items to which they relate. However, upon the completion of the individual departmental and operating budgets, the entire program should be resolved into a statement of estimated income and expense for the budget period. Such a statement serves as a final test of the adequacy of the entire program, and may well reveal weaknesses in areas which would not otherwise be apparent. In the event the esti-

THE ILLUSTRATIVE COMPANY
SCHEDULE OF WORKING CAPITAL REQUIREMENTS AT SELECTED SALES VOLUME
(In Thousands of Dollars)

Annual Sales Volume	$1,000	$5,000	$10,000	$20,000
Current Assets:				
Cash: Fixed	$ 100	$ 100	$ 100	$ 100
Fluctuating	100	600	1,250	1,750
Total Cash	$ 200	$ 700	$ 1,350	$ 1,850
Receivables	$ 110	$ 550	$ 1,100	$ 2,200
Inventories: Fixed	$ 200	$ 200	$ 200	$ 200
Fluctuating	10	50	100	200
Total Inventories	$ 210	$ 250	$ 300	$ 400
Total Current Assets	$ 520	$1,500	$ 2,750	$ 4,450
Current Liabilities:				
Accounts Payable	$ 40	$ 200	$ 400	$ 800
Accrued Payrolls, etc.	20	100	200	400
Accrued Federal Income Taxes	100	600	1,250	1,750
Total Current Liabilities	$ 160	$ 900	$ 1,850	$ 2,950
Working Capital Requirements	$ 360	$ 600	$ 900	$ 1,500

FIGURE 70. Schedule of Working Capital Requirements

THE JONES COMPANY
GENERAL STATEMENT OF WORKING CAPITAL
For the Year 1956

Balance, January 1, 1956			$1,500,000
Add:			
Amount to be secured from long-term debt:			
Five Year Loan		$1,000,000	
Less: Related Expenses		60,000	940,000
Amount Required to Finance Operating Level			$2,440,000
Add:			
Results from Operations (before depreciation and non-cash items)		$ 950,000	
Deduct:			
Expenditures: Dividends	$350,000		
Capital	350,000	700,000	
Net		$ 250,000	
Less: Installment on Notes		200,000	
Net Increase			50,000
Estimated Working Capital Balance, December 31, 1956			$2,490,000

FIGURE 71. Illustrative Working Capital Budget

mated statement does not present a satisfactory picture, the individual budgets may be subjected to further review and revision. The objective is the *best* plan; so that revisions can indicate the budget is serving an exceedingly useful purpose. Critical analysis of the budgeted statement of income and expense should be encouraged.

There is also another reason for preparing a statement of estimated income and expense: it is the most desirable form of presenting the budget to the board of directors for final approval. Executives are familiar with the form of the statement of income and expense as presented to them periodically; hence, the same form serves as the most effective vehicle of expressing the future program. The statement should be accompanied by appropriate narrative comment from the chief executive, controller, or budget committee, setting forth briefly and clearly the significant points of the program, any important changes in policy, and any conditions of marked uncertainty which may require subsequent revision of the program.

The statement of estimated income and expense should take the same general form as that used for the actual statements, except that

GENERAL CHEMICAL CORPORATION
CONSOLIDATED STATEMENT OF ESTIMATED INCOME AND EXPENSE
For the Fiscal Year 1956
(In Thousands of Dollars)

	ESTIMATED, 1956		ACTUAL, 1955		1956 Vs. 1955 Favorable (Unfavorable)
	Amount	% Net Sales	Amount	% Net Sales	
Net Sales	$72,098	100.00	$67,197	100.00	$4,901
Manufacturing Cost of Sales	60,118	83.38	56,537	84.14	(3,581)
Gross Profit	$11,980	16.62	$10,660	15.86	$1,320
Selling Expense	2,163	3.00	1,849	2.75	(314)
Administration and Research Expense	2,037	2.82	1,840	2.74	(197)
Operating Profit	$ 7,780	10.80	$ 6,971	10.37	$ 809
Other Income	172	.24	168	.25	4
Other Deductions:					
Pension Plan	442	.61	456	.67	14
Other	598	.83	529	.79	(69)
Income before Interest and Income Taxes	$ 6,912	9.60	$ 6,154	9.16	758
Interest on Funded Debt	468	.65	493	.74	25
Income before Income Taxes	$ 6,444	8.95	$ 5,661	8.42	$ 783
Income Taxes	3,053	4.23	2,610	3.88	(443)
Net Income	$ 3,391	4.72	$ 3,051	4.54	$ 340

FIGURE 72. Statement of Estimated Income and Expense

the figures should be entered in even amounts (usually in even hundreds of dollars). Condensed statements should be prepared for the board of directors and detailed statements for the operating executives. An illustrative form for the annual budget is shown in Figure 72. The latter must frequently be broken down into divisional statements for different branches, departments, major product divisions, etc. These statements generally can be prepared from the worksheets used in formulating the individual department budgets.

Statements should subsequently be prepared comparing the actual operations with the budget, both for the current month and for the budget period to date. Figure 73 illustrates such a condensed statement for a baking company. Where certain ratios or relationships are of major consequence, these too may be shown in the summary comparisons. For example, in this baking concern, the major costs are direct material, direct labor, and distribution costs; and the relationship of these costs to dollar volume is extremely important. Significant variances between budgeted and actual results should be explained by narrative comment setting forth the causes and responsibility therefor. It is sometimes helpful to include graphs showing trends of actual performance as compared to budget.

Statement of Estimated Financial Condition. Some executives may question the necessity of preparing statements of estimated financial condition. It must be admitted that some concerns which have fairly well developed budgetary procedures do not prepare such statements. The authors do not share the view that they should not be prepared, and believe that in the vast majority of cases such statements are of definite value. A condensed statement, which requires no great amount of work, will usually suffice.

In the first instance, a statement of estimated financial condition will serve as a check on the completeness and reasonableness of the assumed transactions. It assists in a review of the accuracy of the recorded activity. But aside from this reason, there is a more fundamental basis for preparing the statement.

The statement of estimated financial condition reveals the financial picture as it will be at the close of the budget period if the operations for the period are carried out as planned. The questions can then be answered as to whether the financial condition as contemplated is a healthy one and whether the financial trends are toward strength or weakness. There is no factor in business operation more important than that of maintaining a sound financial position; even large profits are of little consequence if the financial position becomes unbalanced and the concern finds itself without funds to meet its obligations.

SUMMARY OPERATING BUDGET COMPARISON

To February 28, 19....

	MONTH OF FEBRUARY			TWO MONTHS		
	Budget	Actual	Over Under (Red)	Budget	Actual	Over Under (Red)
Net sales....						
Cost of goods sold:						
Material..........						
Labor............						
Burden....						
Total...						
Gross profit.........						
Distribution cost... .						
Administrative and general expense....						
Other income...... .						
Net profit before taxes						
Income taxes.... ..						
Net profit after taxes.						
PHYSICAL VOLUME IN UNITS						
Sales in units.... ...						
Selling price per unit.						
Factory cost per unit.						
Distribution cost per unit..						
PERCENTAGES OF SALES						
Material.......						
Labor..............						
Distribution cost....						

FIGURE 73. Operating Budget Comparison

Every experienced accountant has seen examples of this situation. It is true that the operations may not be carried out as planned and consequently the financial condition may not actually result as planned; but it is far better to have an intelligent financial plan as a guide than to assume that the financial condition can be safely watched from day to day. Hundreds of business failures annually attest to the inefficiency of the latter method.

Financial Policies and Standards. A company should be guided by definite financial policies based on accepted financial standards. For example, there may be sufficient empirical data to demonstrate that, in the industry concerned, fixed plant and equipment should not exceed

GENERAL CHEMICAL CORPORATION
COMPARATIVE STATEMENT OF CONSOLIDATED FINANCIAL CONDITION

December 31, 1955 and 1956

(In Thousands of Dollars)

	As of 12/31/56	As of 12/31/55	Increase (Decrease)
ASSETS			
CURRENT ASSETS:			
Cash	$ 2,916	$ 2,437	$ 479
Receivables—Net after reserve	5,713	5,295	418
Inventories: Finished	9,794	10,608	(814)
Work in process	3,583	3,565	18
Raw material	4,563	5,334	(771)
Total Current Assets	$26,569	$27,239	$ (670)
FIXED ASSETS:			
Plant and equipment	$76,739	$73,617	$3,122
Less: Reserve for depreciation	42,968	40,444	2,524
Net	$33,771	$33,173	$ 598
Leaseholds	$12,719	$12,564	$ 155
Less: Reserve for amortization	7,400	7,269	131
Net	$ 5,319	$ 5,295	$ 24
Net Fixed Assets	$39,090	$38,468	$ 622
Investments in affiliated companies	$ 256	$ 256	–
Other assets and prepayments, etc.	1,219	1,174	45
TOTAL ASSETS	$67,134	$67,137	$ (3)
LIABILITIES AND NET WORTH			
CURRENT LIABILITIES:			
Notes payable	$ –	$ 1,200	$(1,200)
Accounts payable and payrolls	3,553	3,908	(355)
Preferred Stock dividend payable	232	242	(10)
Funded debt maturing within one year	800	800	–
Accrued income taxes	2,528	2,145	383
Accrued interest on funded debt	71	80	(9)
Other accrued liabilities	587	641	(54)
Total Current Liabilities	$ 7,771	$ 9,016	$(1,245)
3% Mortgage Bonds	$12,000	$12,800	$ (800)
CAPITAL STOCK AND SURPLUS:			
$6 First Preference Stock	$ 8,607	$ 8,607	$ –
$2 Second " "	2,761	3,183	(422)
Common stock	1,993	1,993	–
Capital surplus	2,858	2,826	32
Retained earnings	24,439	21,860	2,579
Restricted earnings for retirement of Preference Stock	6,705	6,852	(147)
Total Capital Stock and Surplus	$47,363	$45,321	$2,042
TOTAL LIABILITIES AND NET WORTH	$67,134	$67,137	$ (3)
Working Capital	$18,798	$18,223	$ 575

FIGURE 74. Statement of Consolidated Financial Condition

from 50% to 65% of the net worth. Consequently, the board of directors may have adopted the policy of holding to the lower limit. The application of this ratio to the estimated balance sheet will readily indicate whether or not the contemplated program is in accord with this policy.

Illustrative of similar financial and operating relationships which may be used in this manner are:

1. Current assets to current liabilities.
2. Net working capital to fixed liabilities.
3. Inventory to current liabilities.
4. Total assets to net worth.
5. Current liabilities to net worth.
6. Net sales to receivables.
7. Net sales to inventory.
8. Net sales to working capital.
9. Net sales to plant assets.
10. Net sales to net worth.
11. Net sales to net profit.
12. Net profit to net worth.

It has been said that the really successful business executive always expects the unexpected. It is adherence to tested standards, as expressed through such relationships as the above, which prepares and fortifies a business to meet the unexpected situations.

Form and Frequency of Statement of Financial Condition. The statement of estimated financial condition need not, as a rule, be prepared for intervals of less than a quarter and in some types of business one balance sheet as of the close of the budget period is sufficient. It should be condensed in form and prepared in even amounts. As in the case of the statement of income and expense, it should include significant ratios and when presented to the board of directors for approval should be accompanied by narrative comment pointing out any significant trends in the financial position. Since the entire budget program should be completed before the beginning of the budget period, it is impossible to set up the budgeted statement of financial condition in comparison with the actual as of the close of the fiscal year. A suggested practice is to commence with the last available actual figures, estimate the transactions to the close of the fiscal year, and then compare the financial condition of the two like periods (usually December 31 of the two years). Subsequently a comparison of actual and budget as of the year end may be completed. An illustrative comparative statement is shown in Figure 74.

If the actual financial condition at the close of the budget period does not approximate that budgeted, the cause can be traced to the failure to execute the operation, plant, or financial programs as planned. These variances between the program and the actual results will be revealed in the comparisons of the individual budgets; hence, it is not so essential that a balance sheet comparison be made. Some concerns do prepare such a comparison as a method of presenting to the board of directors a summarized report on the extent to which the planned program has been fulfilled.

Statement of Estimated Retained Earnings. The financial picture is completed by the statement of estimated retained earnings. This may be appended to the statement of estimated income and expense or prepared as a separate schedule. The latter plan is illustrated in Figure 75 for the baking company referred to above. Here again, the retained earnings of the period just ending must be estimated as in the case of the statement of estimated financial condition.

STATEMENT OF ESTIMATED RETAINED EARNINGS

For the Six Months Period Ended June 30, 1956

Estimated retained earnings December 31, 1955			$600,000
Add budgeted net profit for six months		$100,000	
Deduct:			
Provision for income tax adjustment in dispute	$30,000		
Dividend on preferred stock of $3.00 per share	15,000		
Dividend on common stock of $2.00 per share	30,000	75,000	
Estimated increase in retained earnings			25,000
Estimated retained earnings June 30, 1956			$625,000

Figure 75. Statement of Estimated Earned Surplus

Statement of Estimated Application of Funds. A statement of estimated application of funds should be prepared either as a separate statement or as a part of the narrative comment which accompanies the statement of financial condition. The latter method is usually preferable as a formal application of funds statement is always difficult for the average executive to interpret. Such comment, for the bakery company referred to above, may be illustrated as follows:

The financial and operating program of the company during the six months ending June 30, 1956, if executed as planned, will provide funds as follows:

Net income as per Estimated Statement of Income and Expense	$100,000
Depreciation, etc., charged as expense but for which no cash outlay will be required	20,000
Total Provided by Operations	$120,000
Funds which will be provided from the sale of additional preferred stock	50,000
Total funds which it is estimated will be available	$170,000

It is planned to use these funds in the following manner:

To add to the plant (It will be noted that these additions exceed by $5,000 the depreciation above; hence it is planned to make a net addition to plant of $5,000)	$ 25,000
To add to the working capital (that is, the excess of current assets over current debts)	98,000
To increase miscellaneous minor assets	2,000
To pay cash dividends	45,000
Total funds to be used	$170,000

Method of Preparing Estimated Statements. The simplest method of preparing the estimated statements is by the use of a work sheet on which is recorded the ending account balances, expected transactions, and adjusted balances. One difficulty is encountered, in that ending balances are not available at the time the estimated statements must be prepared. If, for example, the new budget period covers the six months ended June 30, the estimated statements will be prepared in December before the December 31 account balances are available. For this reason the transactions for December must also be estimated. A worksheet suitable for this purpose may be constructed with the following sections, each containing debit and credit columns.

Trial balance November 30, actual.
Estimated transactions for December.
Estimated profit and loss to December 31.
Estimated balance sheet at December 31.
Budgeted transactions for six months ended June 30.
Estimated profit and loss for six months ended June 30.
Estimated balance sheet at June 30.

A simplified illustrative form, without explanation of journal entries, is shown in Figure 76.

Data for the budgeted transactions are taken from the individual budgets previously prepared. The same method may be used for statements at more frequent intervals. The work should be restricted to approximate figures of even hundreds of dollars.

When a concern has subsidiaries or separate operating divisions, the statements must be prepared for each and consolidated by the same method as employed in making the actual consolidated statements.

THE JONES COMPANY
WORKSHEET—FORECASTED FINANCIAL STATEMENTS
For the Forecast Year 1956

	Balance 11/30/55		Estimated December Transactions		Estimated Balance 12/31/55		1st Quarter Transactions		Estimated Balance 3/31/56	
	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.
Cash	$ 400,000		$①277,000	$②250,000	$427,000		$①1,020,000	$②1,170,000	$277,000	
Accounts Receivable	300,000		③350,000	①280,000	370,000		③1,200,000	①1,033,000	537,000	
Reserve for Doubtful Accounts		$10,000				$10,000				$10,000
Inventories:										
Raw Materials	300,000		⑧100,000	⑦120,000	280,000		⑧470,000	⑦440,000	310,000	
Finished Goods	500,000		⑦250,000	④200,000	550,000		⑦890,000	④700,000	740,000	
Prepayments	50,000			⑦ 10,000	40,000			⑦ 30,000	10,000	
Land and Buildings	100,000				100,000				100,000	
Machinery and Equipment	400,000				400,000				400,000	
Reserve for Depreciation		50,000		⑦ 5,000		55,000		⑦ 15,000		70,000
Notes Payable		50,000				50,000	② 30,000			20,000
Accounts Payable		100,000	②100,000	⑧100,000 ⑤ 60,000		160,000	②500,000	⑧470,000 ⑤150,000		280,000
Dividends Payable								⑨ 16,000		16,000
Accrued Payroll		40,000	②100,000	⑦110,000 ⑤ 30,000		80,000	②510,000	⑤130,000 ⑦390,000		90,000
Accrued Taxes		250,000	② 50,000	⑦ 5,000 ⑥ 25,000		230,000	②130,000	⑦ 15,000 ⑥100,000		215,000
Funded Debt		500,000				500,000				500,000
Common Stock		800,000				800,000				800,000
Earned Surplus		250,000		⑨ 32,000		282,000	⑨ 16,000			266,000
Sales				③350,000				③1,200,000		
Cost of Goods Sold			④200,000				④700,000			
Selling Expense			⑤ 50,000				⑤170,000			
Administrative Expense			⑤ 40,000				⑤110,000			
Cash Discounts Granted			① 3,000				① 13,000			
Federal Income Tax			⑥ 25,000				⑥100,000			
Profit for Period			⑨ 32,000					107,000		107,000
Total	$2,050,000	$2,050,000	$1,577,000	$1,577,000	$2,167,000	$2,167,000	$5,859,000	$5,859,000	$2,374,000	$2,374,000

FIGURE 76. Worksheet—Forecasted Financial Statements

Revision of Financial Budget. When operations do not proceed as planned with the result that the financial position will be materially affected, or when it is apparent that the operating budgets must be subjected to important revision, the entire financial program must be revised to conform therewith. Unexpected conditions will arise in business which cannot be foreseen. It is for these contingencies that margins of financial safety are maintained. The purpose of the financial budget is to provide a safe financial program in conformance with operations as expected. If material change occurs in this expectancy, the financial program must be revised to meet the new conditions.

Responsibility For Financial Budget. The question may be raised as to who should prepare the financial budget. The most effective budgeting is usually a cooperative effort, and the financial budget is no exception. The cash budget is perhaps best prepared by the controller or chief budget officer with the aid of the treasurer and assistance from the credit manager, purchasing agent, or other operating executives. When the tentative statements of estimated income and expense, estimated financial condition and working capital are prepared, also by the controller or budget officer, they are usually reviewed and discussed by the chief financial officer and the chief executive or executive committee. When definite policies are set or decisions are made, any revisions would then be made by those who prepared the statements originally.

PART III

TOP-MANAGEMENT AND ADMINISTRATIVE ASPECTS OF BUDGETING

Chapter 24

PLANNED PROFIT CONTROL—METHOD

The Management Objective. Perhaps it is elementary to state that the objective of business is the earning of a net profit—not any kind of profit, but profit consistent with the company's responsibilities to its customers, employees, and owners. Only by earning a profit through selling goods or services at a fair price, while paying fair and reasonable wages, can a business justify its existence. Conversely, only by earning a fair profit will the necessary capital be available for longer term expansion; and only from profit can come the higher wages, or the better products provided by research. Rarely do such achievements stem from companies which consistently lose money.

Yet, net profits do not merely happen. While earnings occasionally arise by reason of fortuitous circumstances, fair profits over many years are primarily the result of skillful planning, coordination and control. These are the functions which should be exercised by management. It follows, therefore, that the objective of business management should be net profit as distinguished from merely increased sales volume, or reduced manufacturing costs, etc., per se. The increasing complexities of modern business operations have placed a greater responsibility than ever before on top management. Indeed, it might be fair to say that *management* is the single most important factor in satisfactory earnings.

Despite the objective of business, there are many managements which are not "profit-minded." Some are sales minded, and want to get a high sales level, without regard to product profitability. Some are price conscious and believe that sufficiently low prices will secure a sufficiently high volume which will practically assure a profit. Others have as an apparent objective an efficient production set up. The financial-minded management places emphasis on mergers or financial manipulations. All these factors must be considered, and balanced in relation to each other. The "in balance" management is the profit minded management. It recognizes that profits are the result of intelligent planning for potential profit coupled with the necessary coordination and control to meet changing conditions.

Budgeting and "Profit-Planning." The question may arise as to the relationship between budgeting and this "profit-planning." Preceding chapters have dealt with specific phases, with individual functions, of the budget picture—the sales budget, the production budget, and the selling expense budget, to mention a few. These individual budgets were then combined in the financial budget. Yet, this is only a *part* of the planning requirements of business. It may be said that the success of a top executive depends in large degree upon his skill in dealing with probable future conditions. Many policy questions arise, many policy decisions need to be made, many day-to-day operating problems occur, wherein the economic structure or characteristics of the business must be known. The probable result of certain actions must be predicted with some degree of certainty. These budgeting techniques must be applied in terms of an integrated and complete picture. "Profit-planning" has become associated with break-even analysis and the entire cost-volume-profit relationship. It involves the recognition of variable and fixed costs, and of marginal income in contrast to "traditional" costs.

Interrelationship of Business Factors. Before considering in some detail the effect of costs and volume on business profits, it is desirable that the far reaching results of any given business decision be understood. Thus, a great number of questions will be raised, either in relationship to a specific isolated question, or in connection with the budget program generally. For example, answers must be provided to such questions as these:

1. What products and services should be offered?
2. What physical volume of sales should be secured?
3. What prices should be set?
4. What credit policy should be followed?
5. What changes should be made in sales effort and distribution methods?
6. What changes should be made in production methods?
7. What capital expenditures should be made?
8. What changes should be made in the financial structure and policies?

There are two major difficulties in answering such questions as the above. First, it is difficult to predict the effect of a change in policy on customers and competitors. All that can be done on this point is to search diligently for information throwing light on the questions, analyze and interpret the information in the most logical manner possible, present the information to those executives who in a particular case are best qualified to judge, and rest on their judgment. The controller's chief responsibility here is to provide the executives, who are called upon to make such decisions, with all possible information that may aid in making the decisions intelligently.

Secondly, the policies of business operation are so largely interrelated that a change in one affects many others; hence, the program adopted must constitute a choice of many possible combinations of operating factors. It must be the one combination which offers the highest promise of profitable results.

It should be immediately apparent that virtually all of such problems as those mentioned above are interrelated.

> The products to be offered will have a direct relation to the physical volume to be secured, prices, sales effort, capital expenditures, production costs, and financial plans.
>
> Physical volume of sales will be affected particularly by prices, sales effort, credit policy, and products offered.
>
> The prices to be set will depend upon the physical volume desired, the sales effort to be used, the credit policy to be followed, and the products offered.
>
> The credit policy to be followed will be related to the physical volume desired, prices, sales effort, products offered, and financial plans.
>
> The amount of sales effort necessary will be determined by the physical volume desired, prices, credit policy, and products offered.
>
> Capital expenditures to be made will depend upon the physical volume desired, products offered, production costs desired, and financial plans.
>
> The changes in production methods and costs will depend upon the physical volume, products offered, capital expenditures, and financial plans.
>
> The financial plans must be related to physical volume, prices, sales effort, credit policy, products offered, capital expenditures, and production methods.

While the foregoing list by no means exhausts the relationships which may arise, it indicates clearly that they are extensive and that a decision cannot be made relative to one factor without following through to determine the effect of such a move on all related factors.

In appraising figures on the results of probable action, these interrelationships must be kept in mind. However, the problem is not as complex as might appear at first blush. As a practical matter, usually only a single or limited number of important changes will be under study, so that the number of relationships can be kept to a minimum. Moreover, even where the problem is of wide consequence, the effect on many of the other operating factors may be negligible.

Two General Methods of Approach. There are two general methods of approach to the problem of finding the direction which the program should take. The first of these is to select certain particular relationships which seem of uppermost importance to the concern at hand and to chart these relationships under different assumed circumstances. It is an attempt to reveal what would happen if the concern did this or that under certain prescribed conditions.

This method provides certain general guides. For example, such questions as the following may be answered—assuming, of course, certain prescribed conditions:

1. At just what percentage of capacity operation the concern can break even or can provide various rates of return on the investment?
2. How rapidly profits increase or decrease as physical or money volume rises and falls?
3. What percentages of the plant facilities are necessary to produce varying money volumes?
4. What increases in unit sales will be necessary to compensate for decreases in prices?

The second method simply proceeds from operations as they now are to what they would be under some definite proposal of change in particular policies. For example, let us assume that sales are now 1,000 units, the price $10 per unit, the selling effort $3,000, and the net profit $500. There is a proposal to change the selling price to $9 a unit, increase the volume to 1,500 units, and increase the sales effort to $3,500. Will the profit be more or less under this proposal and can such a program be safely financed? The effect of the changes on all related factors is estimated and operating and financial statements are constructed to show the probable effect of such a move.

Each proposal which, in the opinion of the management, is worthy of consideration is thus examined and tested. The ones showing promise of improvement are adopted.

It will be apparent that the two methods are fundamentally the same, in that they both proceed to examine the effect of changes in certain policies by giving consideration to all the related factors. The main difference is that the first method requires an estimate of the effect of changes through a whole range of relationships, while the second method concerns itself only with changes occurring within the limits of certain definite proposals. For example, by the first method, the profitableness of operations may be calculated for every percentage of plant capacity from zero to 100%; whereas, by the second method, the estimates and calculations would concern themselves only with changing the percentage from 70% where it now is to, let us say, 80% which is being proposed.

The approach to be taken may be determined largely by the nature of the problem. Thus, the decision to be made might be so broad in scope that analysis over a wide area should first be made, and subsequently considered in certain restricted areas selected as the most feasible. In other instances, the limits of the problem may be so confined, and the alternatives so few, that a computation of only a narrow field is needed.

The general approach and specific applications are reviewed in the following sections.

The Cost-Volume-Profit Relationships.[1] Most business decisions involve the selection of *alternatives*—whether to accept certain business at a specified price or not, whether to aggressively sell products A or B, whether to expand in territory X or Y. In all these decisions, as well as many others, three factors must be considered: volume, costs, and profit. An understanding of the relationship between these three forces, and of the probable effect that any change in sales volume would have on the business, should be extremely helpful to management in a broad variety of problems involving planning and control. The interrelationship of costs, volume, and profits makes up what may be described as the profit structure of a company. Through the knowledge and intelligent use of such information, it is possible to predict the effect of any number of contemplated actions.

The data used in a review of such relationships may come from several channels and may differ considerably in adaptability or usefulness. In companies where a rather complete sales analysis is made, and where flexible budgets and standard costs are available, the records will provide the necessary information in readily usable form. Costs in all probability will have been segregated into the fixed and variable elements. If such sources are not available, then the conventional historical records might be utilized. Much analysis may be necessary to isolate the effect of changes in volume, selling prices, and variable costs. Moreover, if cost control has been poor, then the relationship between volume and costs will be difficult to detect and the margin of error will be high. Stated in other words, the accuracy of the results will depend greatly on the reliability of the data and the validity of the assumptions.

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[1] Much of the following discussion has been adapted from *Controllership*, by J. Brooks Heckert and James D. Willson, (New York: The Ronald Press Company, 1952), pp. 347-83.

Very often, for investment or credit purposes, published financial statements are used as source data in studying the effect of volume on the business. It should be kept in mind that such statements are usually highly condensed and give little indication of the factors which may greatly influence the results—such as change in product mixture. Consequently, the extent of reliability is very limited.

The Break-Even Chart. The profit structure of a company is often presented in the familiar break-even chart form. By such a presentation, management can understand the interrelationship of costs, profit, and volume much more readily than by tables. A simple chart is illustrated in Figure 77. This chart is based upon the following assumptions:

1. That prices will remain unchanged.
2. That fixed costs will remain the same up to the maximum capacity of the plant.
3. That variable costs will vary in direct ratio to volume.
4. That federal income taxes will be 50% of all income before taxes.

Figure 77 clearly presents the following information for management:

1. Fixed costs of the business are $50,000 monthly.
2. Under present tax laws, and with present facilities, the maximum net profit is $25,000 per month, or $300,000 per year.
3. At present prices, a monthly sales volume of $100,000, or 50,000 units, is required to break even. This makes no provision for dividends to the stockholders.
4. To realize a net profit of $10,000 per month will require a sales volume of $140,000 per month.
5. Plant capacity expressed in sales dollars under existing prices and processes is $200,000 per month.

It may be observed that the net profit is measured by the vertical line between sales income and federal income taxes. Income taxes have been figured only from the break-even point.

Another means of showing the relationship between net profit and sales volume is illustrated in Figure 78. It can be seen that some of the essential cost factors are not disclosed.

A break-even chart which illustrates not only the operating factors but also the dividend requirements is shown in Figure 79.

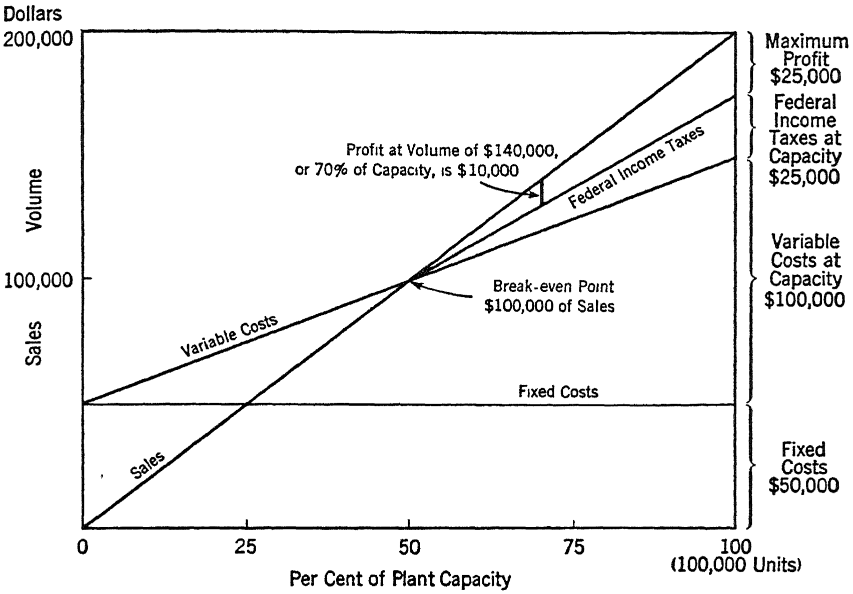

FIGURE 77. Break-Even Chart Illustrating the Interrelationship of Costs, Profits, and Volume

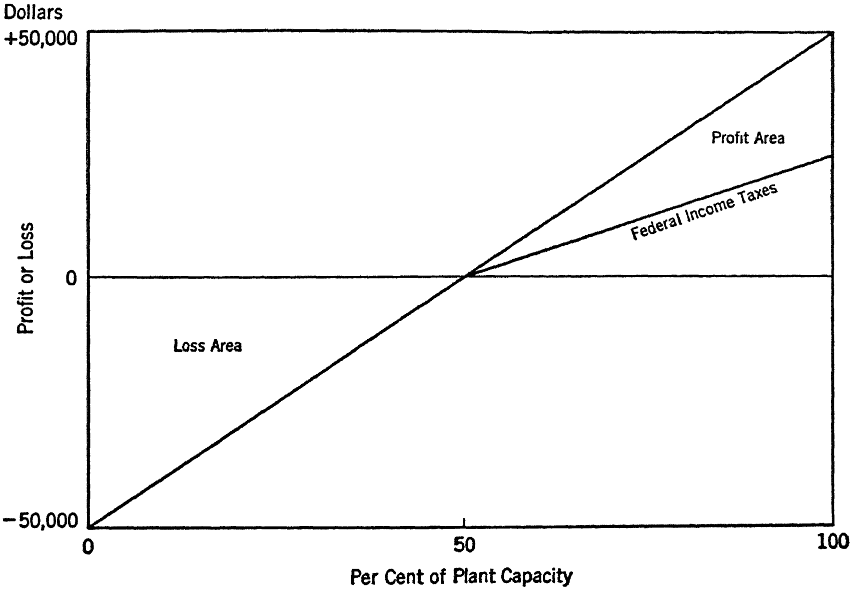

FIGURE 78. Graphic Presentation of Relationship Between Sales Volume and Profit or Loss

Needless to say, in most businesses the cost-volume-profit relationships are more complex than can be shown in any single break-even chart. This is discussed later. Moreover, it is not necessary to draw a chart to find the break-even point of a business. This can always be done by a simple calculation:

$$\text{Break-even point} = \frac{\text{Aggregate fixed expense}}{\text{Ratio of variable income to sales.}^2}$$

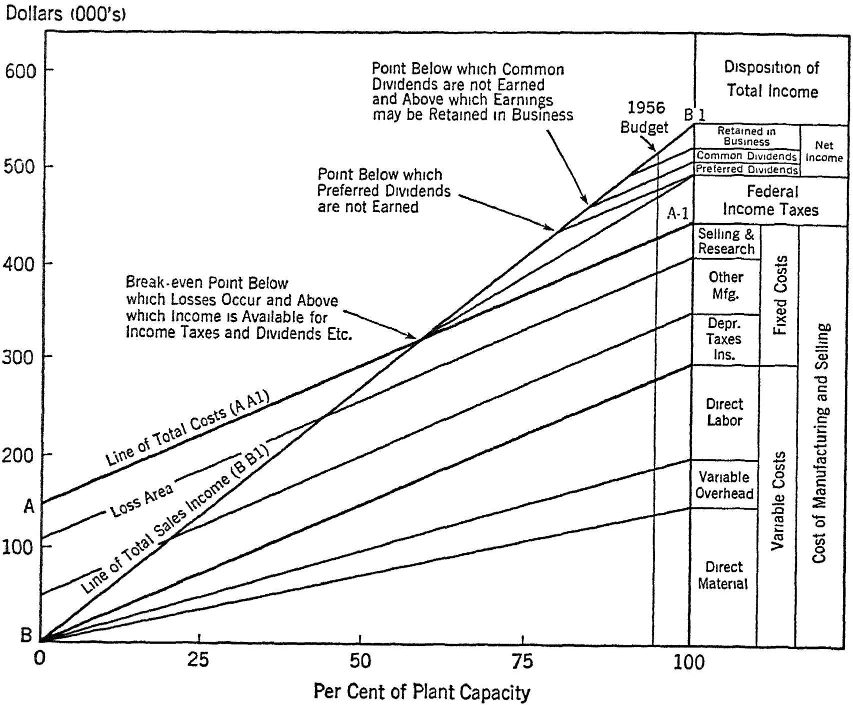

FIGURE 79. Break-Even Chart Illustrating Relationship of Sales Income and Its Disposition

Changes in Sales Revenue. In analyzing the revenue factor, the controller may find it necessary to consider three aspects of the problem:

a) Treatment of difference between sales and production volume.
b) Changes in the composition of sales.
c) Changes in sales prices.

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[2] Variable income represents sales income less the variable expense applicable to such sales.

When past experience is being analyzed, a problem is presented where the sales volume is greatly different from the production volume, with a corresponding change taking place in the finished goods inventory. An adjustment must be made because two different indexes of activity are being used—the production volume for variable manufacturing costs, and sales volume for certain selling and other expenses. The solution lies in converting to a common basis, namely, the sales dollar. First, manufacturing costs must be analyzed or compared to physical production converted to a sales basis—the sales value of production. Next, the nonmanufacturing costs are measured against the sales value. The costs can then be superimposed on each other at the respective levels, and the total costs for various levels of activity can be determined.

Changes in Sales Mixture. Most companies have a variety of product lines, each making a different contribution toward fixed expenses. Changes in the break-even point as well as the operating profit can result from shifts in the mixture of products sold, even though the sales prices are unchanged and though the total dollar sales volume meets expectancy. Such results can occur also from changes in distribution channels or sales to different classes of customers if the rearrangement affects the contribution of the product over and above variable costs. Actually, when a break-even chart is used, an underlying assumption is that the proportion of each product sold, or sales through each channel of distribution, is unchanged. Very often this does not happen; the proportionate drop is not the same for all products. The higher price lines, for example, may decline much more rapidly than others. Such changes must be recognized in evaluating the data.

The effect of a change in sales mixture can be illustrated by the following calculations.

Assume the following proportion of sales among three products, the indicated variable costs, fixed costs, and profit:

	Sales		Variable	Marginal Income Over Variable Costs	
Product	%	Amount	Costs	Amount	% of Net Sales
A	40.00	$ 4,000.00	$2,600.00	$1,400.00	35.00
B	50.00	5,000.00	4,000.00	1,000.00	20.00
C	10.00	1,000.00	875.00	125.00	12.50
Total	100.00	$10,000.00	$7,475.00	$2,525.00	25.25
Fixed Costs				1,200.00	
Operating Profit				$1,325.00	

The break-even point can be calculated as follows:

$$\frac{\$1{,}200}{.2525} = \$4{,}752.$$

If, however, sales increase on the higher margin items, the break-even point would naturally decrease. Such a change is illustrated below:

Product	Sales		Variable Costs	Marginal Income Over Variable Costs	
	%	Amount		Amount	% of Net Sales
A	60.00	$ 6,000.00	$3,900.00	$2,100.00	35.00
B	35.00	3,500.00	2,800.00	700.00	20.00
C	5.00	500.00	437.50	62.50	12.50
Total	100.00	$10,000.00	$7,137.50	$2,862.50	28.625
Fixed Costs				1,200.00	
Operating Profit				$1,662.50	

The break-even point would be:

$$\frac{\$1{,}200}{.28625} = \$4{,}192.$$

This break-even point has dropped by $560 only as a result of the changes in sales mixture.

Changes in Sales Price. On the typical break-even chart the sales value is represented by a line which starts at zero and proceeds upward as the volume increases. Sales value equals unit selling price times number of units. It can be understood that the slope of the line changes if the unit sales price changes. The effect of 10% increase in selling prices is illustrated in Figure 80.

Quite often some of the variable costs—commissions or royalties, for example—are related to the sales price. Consequently, the variable cost line as well as the sales value line might change as a result of selling price changes. In Figure 80 it has been assumed that variable costs relate only to units sold and not value. As a direct result of the increase in selling price, the break-even point has dropped from $100,000 to $91,650, or by 8.35%.

It should be clear that a change in selling price affects the break-even point and the relationship between income and variable costs. The controller or budget director should also be aware that a change in selling price may have an even greater effect upon marginal income than a corresponding percentage increase in variable costs. For example, in the following illustration, a 10% drop in selling prices is

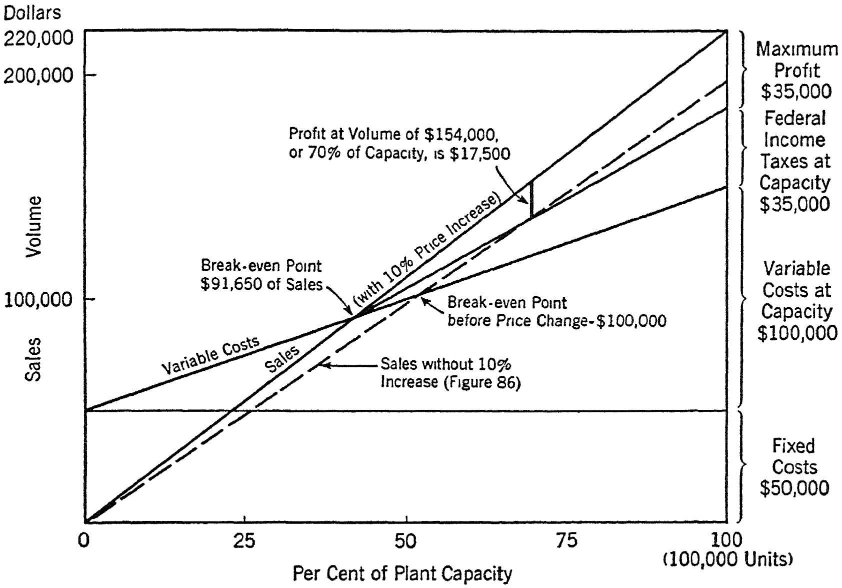

FIGURE 80. Graphic Illustration of Effect of Sales Price Change on Net Income

equivalent to a 11.1% increase in variable costs as regards the break-even point and marginal income:

	At Present Selling Prices		With a 10% Reduction in Sales Price		Equivalent Increase in Variable Costs	
	Amount	% of Net Sales	Amount	% of Net Sales	Amount	% of Net Sales
Sales	$50,000	100.00	$45,000	100.00	$50,000	100.00
Variable Costs	20,000	40.00	20,000	44.44	22,222	44.44
Marginal Income	$30,000	60.00	$25,000	55.56	$27,778	55.56
Fixed Costs	15,000	30.00	15,000	33.33	15,000	30.00
Operating Profit	$15,000	30.00	$10,000	22.23	$12,778	25.56
Break-Even Volume .	$25,000		$27,000		$27,000	

Sales were reduced by 10% of $50,000 to a level of $45,000. As variable costs were not changed, these costs as a per cent of sales are 44.44%, or an increase of 11.1% (44.44 — 40 = 4.44; 4.44 ÷ 40 = 11.1%). Relating the revised variable cost as a per cent of net sales to the original $50,000 of sales produces a variable cost of $22,222. This is 11.1% higher than original variable cost.

Changes in Costs. Interpretation of the effect of changes in the cost level presents some interesting problems as well as opportunities for the controller.

An increase or decrease in the amount of fixed cost has a twofold effect: (*a*) the operating profit is changed by a like *amount* and (*b*) the break-even point is changed by a like *percentage*. To illustrate, assume a case where fixed costs are reduced by $10,000 or 33⅓%. The operating profit and break-even points would be thus:

	Present		Fixed Costs Reduced by $10,000	
	Amount	% of Net Sales	Amount	% of Net Sales
Net Sales	$200,000	100	$200,000	100
Variable Costs	120,000	60	120,000	60
Marginal Income	$ 80,000	40	$ 80,000	40
Fixed Costs	30,000	15	20,000	10
Operating Profit	$ 50,000	25	$ 60,000	30
Break-Even Point Sales	$ 75,000		$ 50,000	

With a reduction of $10,000 in fixed costs, the operating profit naturally increased by a like amount. Moreover, fixed costs were reduced 33⅓%, and so the break-even point also declined by 33⅓%, or from a $75,000 sales volume to $50,000.

This calculation assumes that no change would take place in variable costs, but in practice a change in fixed costs may be accompanied by a change in the variable. For example, installation of a labor-saving device may increase depreciation and maintenance charges while at the same time decreasing direct labor costs and related payroll charges. Such possibilities must be considered. Needless to say, if an increase in fixed costs is being discussed, the probability of an increased sales volume should be reviewed. Furthermore, it would be well to examine possible alternatives, such as subcontracting or renting of space and equipment in lieu of purchasing. Acquisition of permanent assets will decrease the concern's ability to adjust its costs to lower levels should a reduced sales volume ever necessitate such action. Opportunities for the reduction of fixed expenses should not be overlooked in any attempt to reduce costs. A lowering of *fixed* costs increases the margin at any sales level, and by reducing the break-even point enables the company to withstand a greater drop in income before losses appear.

Changes in unit variable costs or expenses, of course, also affect the break-even points as well as the marginal income factor (discussed in the next section). Perhaps most cost reduction programs center about this category. A great many possibilities are open. For example, changes in the type of material used, or the purchase price of material, or the amount of scrap or waste can affect variable material costs. Changes in manufacturing processes, hourly labor rates, plant layout, or employee training methods, or the introduction of incentive payments can all affect the labor costs. General economic conditions may influence the ability of a firm to reduce variable costs. Very often the reduced sales volume permits more effective maintenance of equipment in the shutdown periods. Then, too, in such periods the labor turnover rate and material prices are usually reduced. Of course, such conditions may force sales price reductions on the company's own products.

The effect of reduced fixed and variable costs is graphically illustrated in Figure 81.

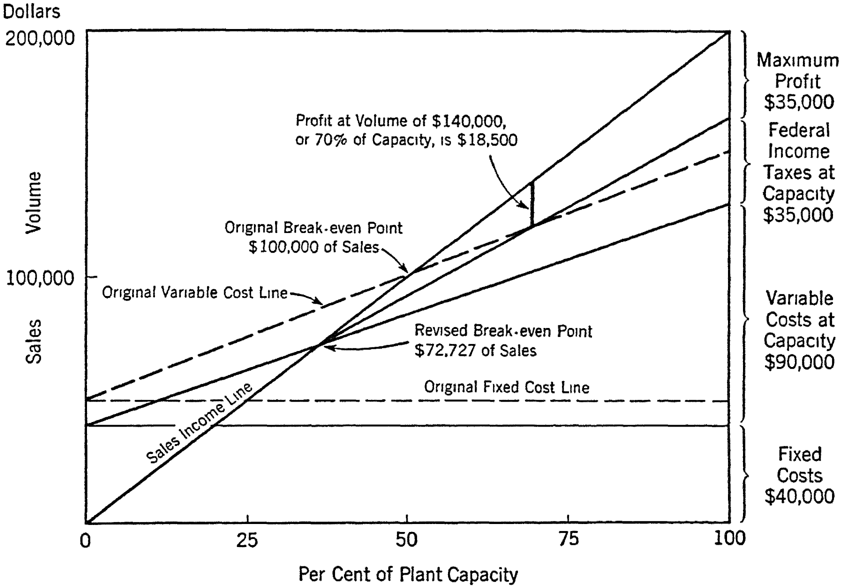

FIGURE 81. Chart Illustrating Effect of Reduced Variable and Fixed Costs on Profit

Marginal Income Ratio and Margin of Safety. In any review of the interrelationship of costs and volume, one of the most significant figures is the marginal income ratio. This may be defined as the residual value after deducting the variable cost from net sales, expressed as a percentage of the net sales. The marginal income ratio represents the share of the sales dollar remaining to cover fixed expenses, income taxes, and net profit. It is indeed a highly useful figure, for it can be employed to determine readily the break-even point or the added income resulting from increased sales volume. To illustrate, if sales are to be increased by $30,000 and the marginal income ratio is 40%, then such sales should result in additional income before taxes, all other factors unchanged, of $12,000 (40% of $30,000). To determine the break-even sales volume, it is necessary merely to divide total fixed costs by the marginal income ratio, as mentioned earlier. The marginal income ratio is useful, also, in determining how low a price may be quoted, or what sales volume is required to support a salesman in a territory. It is probably a much more useful figure than the break-even point. Where the marginal income ratio is high, a change in sales volume has a tremendous effect on profit. Thus, an increase of $100,000 in sales will increase operating profit by $60,000 for a company with a 60% marginal income ratio, but only $20,000 for a firm with a 20% marginal income ratio. A high ratio, of course, may carry with it high fixed charges. Incidentally, if the controller can prepare the income and expense statements to indicate the marginal income, the use of such statements will be greatly enhanced.

Another figure often used in conjunction with cost-volume-profit analyses is the margin of safety. It is defined as the excess of actual or budgeted sales over the break-even sales volume, and is a measure of the extent to which sales may drop before losses appear. The profit strength of a business might be said to be proportionate to the distance between its existing sales volume and its break-even point. Over the period of a business cycle, as between any two companies of the same size with the same percentage of net profit on present sales volume, the one with the greater margin of safety may have the greater earning power.

Analysis by Products. Since most companies have more than one product or product line, a large number of business decisions relate to *individual* product lines. For this reason, it is desirable to apply the cost-volume-profit analysis to specific product lines so that management can better understand the effect upon profits of changes in volume of selected products, or of the relative proportion of products sold.

The same technique which is applied to over-all operations can be applied to individual product lines. Decisions reached from such studies should be a guide in determining which products should be sold aggressively (or emphasized because of profits, or sold through a particular channel of distribution); which products should be continued but not promoted, merely because of some contribution toward fixed expense; and which lines or commodities should be discontinued or replaced by more profitable lines. Obviously, general economic conditions, relative supply and demand, and the long-range effect on customer relationships are some noncost factors which must be weighed.

In making any profit analyses the reliability of the results depends in part upon the organization structure and the extent or type of analysis made. To illustrate, a product manufactured in one plant and requiring all the plant's facilities, which is then marketed through its own separate sales organization, presents few cost allocation problems. Only part of the general administrative expenses need be allocated to the line. Quite in contrast to such a situation is a product whose production and distribution facilities are shared by many other items. In such a case the allocation of fixed and indirect costs requires careful attention, for the reliability of break-even points is greatly dependent upon the manner in which such common costs or expenses are distributed to product lines. If, on the other hand, the objective is not the determination of break-even points but rather a knowledge of marginal income by products, then no allocation of fixed costs would be necessary. The development of variable costs, depending on usage, would be relatively simple. And many companies predicate important decisions on the relative contribution of each line to fixed costs and profit.

Any controller who has had the task of determining an over-all break-even point for his company, and then has determined the break-even point by product lines, has perhaps been confused by the fact that the sum of the individual break-even points usually did not equal the over-all break-even point—unless the sales figures for each break-even point bore the same relationship to total sales as the individual break-even points bore to the over-all break-even point. Such a condition is well explained as follows:[3]

> A business with three products has calculated break-even points for the individual products as follows:

	Product				
	A	B	C	Totals	
Sales	$30	$25	$80	$135	
Variable Costs	12	10	60	82	
Fixed Costs	6	30	10	46	
Break-Even Sales	10	50	40	100	(by cross-footing)
				117	(by computation from totals above)

> The break-even point calculated on an over-all basis is found to exceed the break-even point obtained by summing individual product break-even points. However, if sales of each product have been at the break-even volume for that product, individual break-even points could be cross-footed, to obtain the break-

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[3] "The Analysis of Cost-Volume-Profit Relationships," *N.A.C.A. Bulletin,* Vol. XXXI, No. 4, Section 3, pp. 539-40.

even point based on total sales of the three products combined as illustrated below:

	Product			
	A	B	C	Totals
Sales	$10	$50	$40	$100
Variable Costs	4	20	30	54
Fixed Costs	6	30	10	46
Sales to Break-Even	10	50	40	100

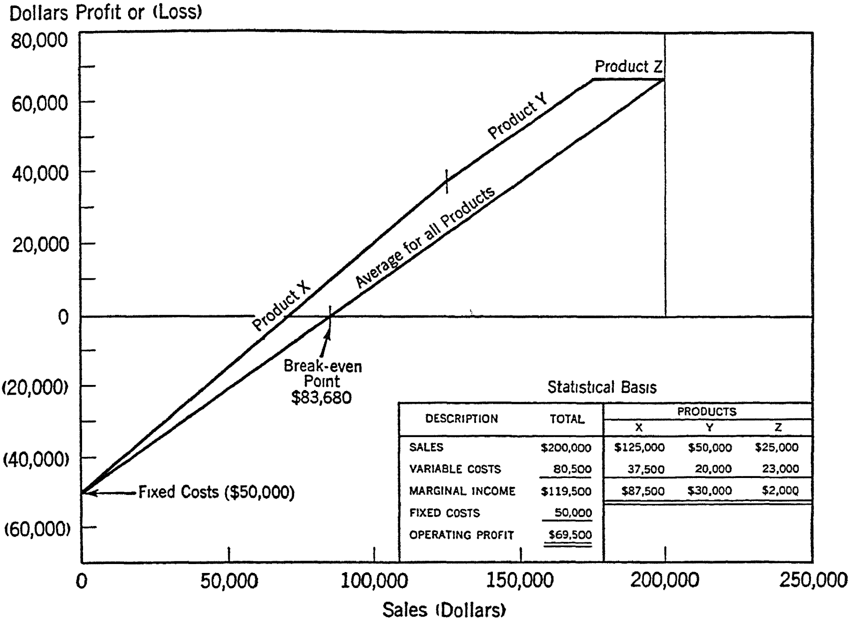
The reason for the difference between the two sets of figures lies in the fact that the sales mix is not the same. Thus, in the first example, the products are sold in proportions of 22%, 19%, and 59%, whereas in the second they are sold in proportion of 10%, 50%, and 40%. When total sales differ from the break-even volume but the distribution among the three products is in the same proportions of 10%, 50%, and 40%, the individual product break-even points add up to the over-all break-even point as shown below:

	Product			
	A	B	C	Totals
Sales	$20	$100	$80	$200
Variable Costs	8	40	60	108
Fixed Costs	6	30	10	46
Sales to Break-Even	10	50	40	100

The effect of such changes in mix is exerted on the break-even point through changes in the over-all marginal income ratio. Unless individual product marginal income ratios are weighted by sales figures in the ratio of the individual product break-even volumes, a different over-all marginal income ratio and hence a different over-all break-even point results.

Where several product lines are being analyzed, the controller may find it advantageous to prepare break-even charts for each product if they are useful to the executives in profit planning. The relative profitability can be determined by observing the slope of the profit line, assuming the same relative scale is used. It is rather difficult to construct a break-even chart for all products combined, which would be of much practical significance. Some companies have used charts similar to Figure 82. Obviously, all the factors cannot be presented.

Break-Even Analysis by Territories. In the preceding sections, break-even analysis or cost-volume-profit analysis has been applied to the business as a whole and to individual product lines. However, the basic technique is applicable to territories, as well as other distribution segments such as channels of distribution and method of sale. Generally speaking, where both direct and allocated costs are involved, it is desirable to determine the economic structure on the basis of the direct costs, and then again with the indirect costs included. In effect



Statistical Basis

DESCRIPTION	TOTAL	PRODUCTS		
		X	Y	Z
SALES	$200,000	$125,000	$50,000	$25,000
VARIABLE COSTS	80,500	37,500	20,000	23,000
MARGINAL INCOME	$119,500	$87,500	$30,000	$2,000
FIXED COSTS	50,000			
OPERATING PROFIT	$69,500			

FIGURE 82. Profitability of Products in Relation to Break-Even Point

a dual set of break-even points and other significant data are determined.

Practical Application of Cost-Volume-Profit Analysis. When the budget director, or the controller, is fully conversant with the economic behavior of his company, the question arises as to how such information best can be put to work. The data are used principally in the planning and policy-making fields. Its chief value lies in the facility with which volume can be treated as a variable factor. Through the use of the information one can fairly easily determine the profit effect of any number of contemplated changes. Such flexibility is in marked contrast to the traditional statement of income and expense.

A great many questions arise in the management of a business, and the cost-volume-profit approach can readily supply answers for many of them. For example, questions such as these must be tackled:

1. What will be the profit or loss at *x* sales volume?
2. What is the increased sales volume required to meet the additional fixed charges expected to arise from the proposed plant expansion program?
3. What sales volume is required to earn a designated profit?
4. What is the possibility of earning a profit on X product?

5. What additional sales volume is needed to offset the increased labor costs resulting from the union contract settlement?
6. At a sales level of x dollars per month, what reduction in fixed and variable costs must be made to earn y profit, before income taxes?
7. What will be the net profit effect of a 20% increase in sales volume?
8. If the unit sales prices are reduced x per cent, how much will net profit decline?
9. What will be the net profit results if a second shift is added?
10. Should the X product line be discontinued? What will be the profit effect?
11. What contribution is R territory making to the operating profit of the company? What will be the increased profit if the volume of S product is doubled?
12. If the sales volume declines 20%, what will be the unit manufacturing cost of product T?

A thorough understanding of the cost-volume-profit relationship can be of great value in providing the correct answers in a relatively short time. Some applications of these relationships are discussed in the following sections.

Selecting the Most Profitable Products. When all the productive facilities of a company are fully occupied, and when the demand is much greater than supply, a decision must be reached as to the products to be manufactured. To be sure, the long-term customer reactions, the availability of material, and the probable continued price differential between different products must be weighed. But relative costs and profit should be important factors in the decision. Whether one or many products are manufactured, the principle is valid. Of course, where several products are manufactured by different processes and in different departments, the bottleneck department should be considered separately.

In earlier sections the importance of marginal income was emphasized; and the greatest marginal income is desirable because it usually results in the highest net profit. However, when considering marginal income, the greatest income per piece or per pound is not the sole factor, for the effect of the rate of production must be reckoned with. To be specific, refer to Figure 83. The greater marginal profit per unit of sale, per hundredweight, is realized on product A. Product B returns only $6.67 marginal income per unit. If only this *unit* marginal contribution were considered, the business would not be making the best use of the facilities. When the operating hour is taken into account, product B returns 11.12% more than A—$100.05 per machine hour as compared with $90 for product A.

In making decisions of this nature, other cost factors must be kept in mind; e.g., cost of carrying inventories and receivables, changes in the relationship of fixed and variable expense.

The Minimum Selling Price. In theory, perhaps, each product should produce a net profit. However, under our competitive economy this does not usually happen. Some products bear their own direct costs, a full share of indirect expenses, and return a net profit. Others may carry only a partial share of their indirect costs. In any event, the objective is to secure the greatest over-all profit. When all the available capacity is not being utilized, the problem arises as to the lowest price to be charged which will still contribute something to the over-all profit. The obvious answer is recovery of variable costs, taking into account any additional maintenance or other costs. Such costs set the floor, and anything above this is making a contribution toward fixed expenses. The concept of fixed and variable costs is necessary to such a determination. Obviously, the controller should be realistic or conservative in the segregation of costs. Further, any legal implications—e.g., question of violating the Robinson-Patman Act—must be reviewed.

	Product	
Description	A	B
Per Hundred Pounds		
Selling Price	$35.00	$ 28.00
Costs		
Variable:		
Material	$18.00	$ 16.00
Labor and Overhead	8.00	5.33
Total Variable	$26.00	$ 21.33
Fixed	5.00	3.33
Total Cost	$31.00	$ 24.66
Operating Profit	$ 4.00	$ 3.34
Marginal Profit	$ 9.00	$ 6.67
Per Machine Hour		
Rate of Production (cwt.)	10	15
Operating Profit ($4.00 times 10; and $3.34 times 15)	$40.00	$ 50.10
Marginal Profit ($9.00 times 10; and $6.67 times 15)	$90.00	$100.05

Figure 83. Computation of Marginal Profit per Unit of Product and per Machine Hour

Unit Costs at Different Volume Levels. Another application of the cost-volume-profit relationship is in the determination of unit costs. Suppose, for example, that management desires to know what the unit cost would be at various sales volume levels, with prices remaining fixed. It may be assumed that, in the illustration at hand, the selling price is $2 per unit. What would be the unit cost were the sales to be increased to $240,000? It is assumed that the present sales consist of 50,000 units and that the present unit cost is $2.40, consisting of $.80 of fixed costs and $1.60 of variable costs.

The proposed volume is 120,000 units ($240,000 ÷ $2). The new unit cost would then be:

$$\frac{\text{Fixed costs}}{\text{Proposed unit volume}} + \text{Present variable unit cost}$$

$$= \frac{\$40{,}000}{120{,}000} + \$1.60$$

$$= \$.333 + \$1.60$$

$$= \$1.933$$

At a sales volume of $240,000, the unit cost is $1.933.

Increased Sales Volume to Offset Reduced Selling Prices. In the illustration at hand, let it be assumed that the sales department insists that the present low volume is due to the fact that the company's prices are out of line with those of competing concerns or with competing products. A reduction of 10% in selling prices is advised. What percentage increase in volume will be necessary to yield a profit of $5,000 if selling prices are reduced 10%?

The assumptions are the same as those mentioned previously, except for the change in prices. In this case, the solution is:

INCREASED SALES VOLUME REQUIRED TO OFFSET REDUCED SELLING PRICE

$$= \frac{\text{Profit desired plus fixed costs}}{1 - \left(\dfrac{\text{Present variable ratio}}{1 - \text{Proposed percentage reduction in selling price}}\right)}$$

$$= \frac{\$5{,}000 + \$40{,}000}{1 - \dfrac{\dfrac{\$80{,}000}{\$100{,}000}}{1 - .10}} = \frac{\$45{,}000}{1 - \dfrac{.8}{.9}}$$

$$= \frac{\$45{,}000}{.111111} = \$405{,}000$$

Therefore, a sales volume of $405,000, or 225,000 units, must be secured to produce a profit of $5,000 if prices are reduced by 10%.

If this goes beyond the capacity of the plant, such a program is impossible without further increase in fixed costs.

Most Profitable Use of Scarce Materials. Another interesting application of cost and profit relationships is the determination of the best use of restricted or scarce materials. Assume, for example, that only partial requirements are available of a chemical common to five products. How should the ingredient X be distributed, considering only the greatest net profit to the company. It is assumed that rates of production are about the same, and that all products are manufactured with the same facilities. The solution is evident from the following example:

	Unit				
Product	Selling Price	Variable Cost	Marginal Income Contribution	Pounds of "X" per Lb. of Product	Marginal Profit per Lb. of "X"
1	$2.00	$1.00	$1.00	.5	$2.00
2	2.50	1.50	1.00	.3	3.33
3	4.00	2.50	1.50	.5	3.00
4	3.00	1.00	2.00	1.5	1.33
5	5.00	2.50	2.50	2.0	1.25

Product "2" yields the greatest profit per pound of "X" and these requirements should be met first, all other factors being equal.

Advisability of Plant Expansion. Break-even and related data are helpful when considering plant expansion. The following information would be useful in arriving at a decision:

1. The relative break-even points.
2. The sales volume required to earn existing profits.
3. The sales volume required to net a fair return on the investment.
4. The maximum profit.

Assume the following:

The present average earnings statement (monthly) of the company:

Net Sales	$500,000
Costs and Expenses	
Variable (60% net sales)	$300,000
Fixed	100,000
Total	$400,000
Net Profit Before Taxes	$100,000
Federal Income Taxes (50%)	50,000
Net Profit	$ 50,000

Increased fixed costs with plant expansion — $50,000
Additional income desired on investment — $5,000
Maximum production in new plant — $300,000

Using the available data, these determinations can be made:

BREAK-EVEN POINTS

Present facilities:

$$\frac{\text{Fixed costs}}{\text{Marginal income ratio}} = \frac{\$100{,}000}{.40} = \$250{,}000 \text{ sales volume.}$$

Proposed:

$$\frac{\text{Present + additional fixed costs}}{\text{Marginal income ratio}} = \frac{\$150{,}000}{.40} = \$375{,}000 \text{ sales volume.}$$

SALES VOLUME REQUIRED TO EARN EXISTING PROFIT

$$= \frac{\text{Present fixed costs + Additional fixed costs + Existing profit}}{\text{Marginal income ratio}}$$

$$= \frac{\$100{,}000 + \$50{,}000 + \$100{,}000}{.40}$$

$$= \frac{\$250{,}000}{.40}$$

$$= \$625{,}000 \text{ sales volume.}$$

SALES VOLUME TO NET A FAIR RETURN ON ADDED INVESTMENT

Assume a fair return on the added investment to be $5,000 (monthly) after federal income taxes, or $10,000 before.

Then a fair return equals at least existing profit plus the above return.

$$= \frac{\text{Present fixed costs + Additional fixed costs + Existing profit + Return on added investment}}{\text{Marginal income ratio}}$$

$$= \frac{\$260{,}000}{.40}$$

$$= \$650{,}000 \text{ sales volume.}$$

MAXIMUM EARNINGS WITH NEW PLANT

Net Sales ($500,000 + $300,000)	$800,000
Costs and Expenses	
Variable (60% of Net Sales)	$480,000
Fixed	150,000
Total	$630,000
Net Profit Before Taxes	$170,000
Federal Income Taxes (50%)	85,000
Net Profit	$ 85,000

These computations may be summarized as follows:

Item	Present	Prospective	Increase
Break-Even Sales Volume (Monthly)	$250,000	$375,000	$125,000
Sales Volume to Earn Existing Profit	500,000	625,000	125,000
Sales Volume to Earn 6% on New Plant Cost	–	650,000	–
Maximum Profit	50,000	85,000	35,000
Sales Volume to Earn Maximum Profit	500,000	800,000	300,000

The management must consider the possibility of increasing sales by $125,000 monthly to maintain existing profits. It must also weigh the probability of sales remaining at least $125,000 higher, for profits before income taxes will be reduced by $50,000 per month if the expansion is made but sales continue at the present level. Sales must be increased $125,000 just to retain existing profits, but this disadvantage may be offset by the higher potential earnings of $35,000 per month.

Incidentally, these calculations illustrate the variety of simple arithmetical formulae which may be helpful in profit planning and control.

Effect of Labor Cost Increases. Quite often a cost increase has somewhat wide repercussions. Assume, for example, that negotiations are underway with the labor union representatives for an adjustment in wage rates. Questions might arise as to the effect on the break-even point if the union demands are met, or what additional sales volume would be needed, at existing prices, to offset such higher costs. To answer such questions would require consideration of such matters as:

1. Segregation of such estimated additional costs as between fixed and variable elements.
2. Effect on *related* costs, such as salaries, social security taxes, workmen's compensation expenses, pension costs, etc.

As an illustration, the following data may be assumed:

Present Costs and Income:

Net Sales		$10,000,000
Cost of Sales		
Variable: Labor	$4,000,000	
Payroll Costs—Other	400,000	
Other	600,000	5,000,000
Marginal Income		$ 5,000,000
Fixed		
Labor	$1,000,000	
Payroll Taxes and Insurance	100,000	
Other	500,000	1,600,000
Operating Income		$ 3,400,000

Assumed Cost Increases Under Consideration:

Variable	
Labor (5%)	$200,000
Related Costs	20,000
Total Variable	$220,000
Fixed	
Labor (5%)	$ 50,000
Related Costs	5,000
Total Fixed	$ 55,000
Total Increases—All Costs	$275,000

The calculation of the increase in break-even point would then be as follows:

$$\text{Break-Even Point (New)} = \frac{\text{Fixed Costs}}{1 - \dfrac{\text{Variable Costs}}{\text{Sales}}}$$

$$= \frac{\$1{,}600{,}000 + \$55{,}000}{1 - \dfrac{\$5{,}000{,}000 + \$220{,}000}{\$10{,}000{,}000}}$$

$$= \frac{\$1{,}655{,}000}{1 - \dfrac{\$5{,}220{,}000}{\$10{,}000{,}000}} = \frac{\$1{,}655{,}000}{.478}$$

$$= \qquad \$3{,}462{,}000$$

$$\text{Break-Even Point (Former)} = \frac{\$1{,}600{,}000}{.50 \quad \text{(Marginal Income Ratio)}} = \quad 3{,}200{,}000$$

Increase in Break-Even Point .... $ 262,000

The additional sales volume required to meet the increased costs could readily be calculated as follows:

$$\text{New Sales Volume} = \frac{\text{Fixed costs plus former profit}}{\text{New Marginal Income Ratio}}$$

$$= \frac{\$1{,}655{,}000 + \$3{,}400{,}000}{.478}$$

$$= \qquad \$10{,}575{,}300$$

Deduct Former Sales Volume Creating the Same Operating Profit	10,000,000
Increased sales volume required	$ 575,300

It is to be noted that when the marginal income ratio is known, the calculation of changes resulting from different fixed costs or operating profit are simple.

Increased Sales Territory Costs. Quite often the sales manager may indicate the desirability of increasing territorial costs. The break-even analysis technique might be useful in such a situation. For example, assume that a given sales territory has a marginal income ratio of 20%. Assume, also, that the sales manager wishes to increase the fixed costs by $12,000 per year. The increased sales volume required to cover these expenses would be $60,000 ($12,000 ÷ .20), or $5,000 per month. When the sales manager knows that for each $1 increase in fixed costs he must secure an additional $5 in sales volume, his enthusiasm may be less noticeable.

Another Illustration. Very often a company is faced with decisions involving perhaps two or three avenues of possible action. The example which follows is indicative of a typical problem. To illustrate this second method of approach, assume that a certain company with a physical capacity of 1,500 units now finds itself in the present situation:

ANNUAL OPERATIONS

Sales (1,000 units at $3)		$3,000
Fixed production, selling, and financial costs	$1,000	
Variable production and selling costs:		
Production ($1 per unit)	1,000	
Selling (30% of sales)	900	
Total costs		2,900
Net profit		$ 100

PRESENT FINANCIAL POSITION

Assets

Current assets	$1,000
Fixed assets	2,000
Total assets	$3,000

Equities

Current liabilities	$ 500
Fixed liabilities	500
Net worth	2,000
Total equities	$3,000

As stated in preceding chapters, costs cannot always be sharply divided between those which are fixed regardless of volume and those which vary with volume, yet such division can usually be made with sufficient accuracy to serve as a general guide to the program. This is usually true, at least, within certain limits.

In the illustration at hand it may be assumed that fixed costs will remain at $1,000 up to the capacity operation of the plant; that variable production costs will bear a constant relationship to physical volume; and that variable selling costs will vary with money volume, though not necessarily in direct proportion thereto.

It should be noted further that all variable costs and expenses have been resolved into two groups—production and selling. That is, all administrative, general, and financial expenses of a variable nature are divided as between these two basic functions. It is usually practicable to make such a division.

The present situation is not satisfactory. Only 66⅔% of the capacity is being utilized, net profit is only 5% of net worth, the current ratio is only 2 to 1 (which it may be assumed is too low for this industry), and the owner equity is only 66⅔% of the total investment. Management is definitely committed to a program of strengthening its financial position and this must be done out of profits. Preferred dividend requirements are assumed to be $60 per year.

The various proposed changes in immediate policy have been narrowed down to three propositions, each of which has its proponents among the management group. These are:

1. A substantial increase in the appropriation for sales effort, prices to remain the same.
2. A substantial increase in prices, the sales effort to remain the same.
3. A moderate increase in both prices and sales effort.

The three proposals have been submitted in detail to the sales executives for estimates as to what physical sales volume can be developed under each plan. Such estimates are often difficult to make but are necessary as a basis for the selection of a program. The estimates in this particular case are set forth as follows:

1st Proposition

A substantial increase in the appropriation for sales effort, prices to remain the same

	Suggested Amounts to be Expended for Sales Effort *	Sales Department's Estimate of Volume Which Will Be Secured	
		Number of Units	Amount
1 (a)	$1,045	1,100	$3,300
1 (b)	1,200	1,200	3,600
1 (c)	1,404	1,300	3,900
1 (d)	1,652	1,400	4,200

* These figures represent the amounts of *variable* selling cost which it is suggested might be expended. They are over and above the *fixed* selling cost.

When translated into their effect upon operating results, these estimates appear as follows:

	1 (a)	1 (b)	1 (c)	1 (d)
Sales (unit price of $3)	$3,300	$3,600	$3,900	$4,200
Fixed costs	1,000	1,000	1,000	1,000
Variable costs:				
Production ($1 per unit)	1,100	1,200	1,300	1,400
Selling (as shown above)	1,045	1,200	1,404	1,652
Total costs	$3,145	$3,400	$3,704	$4,052
Net profit	$ 155	$ 200	$ 196	$ 148

A review of this proposal shows that there is definite promise of increased profits in the direction of increased selling effort. If the individual estimates are examined further they reveal the following:

	Increase in Sales Effort Over Present Expenditure of $900		Resulting Increase in Money Volume		Resulting Increase in Profit
	Amount of Increase	Percentage Increase	Amount	Percentage	
1 (a)	$145	16	$ 300	10	$ 55
1 (b)	300	33	600	20	100
1 (c)	504	56	900	30	96
1 (d)	752	84	1,200	40	48

Proposition 1 (b) shows particular promise. Here an increase of 33% in selling effort is estimated to effect a 20% increase in sales volume and an increase in profit of $100. Beyond this point, the return from increased sales effort shows a somewhat lower return in profit. Even allowing for some error on the part of the estimates, it would appear that the company should plan in the direction of increased sales effort up to approximately 33%.

2ND PROPOSITION

A substantial increase in prices, the sales effort to remain the same

	Suggested Increases in Prices	Sales Department's Estimate of Volume Which Will Be Secured	
		Number of Units	Amount
2 (a)	3%	975	$3,012.75
2 (b)	7	900	2,889.00
2 (c)	10	800	2,640.00
2 (d)	15	650	2,242.50

When translated into their effect upon operating results, these estimates appear as follows:

	2 (a)	2 (b)	2 (c)	2 (d)
Sales (as above)	$3,012.75	$2,889.00	$2,640.00	$2,242.50
Fixed costs	1,000.00	1,000.00	1,000.00	1,000.00
Variable costs:				
Production ($1 per unit)	975.00	900.00	800.00	650.00
Selling (to remain the same).	900.00	900.00	900.00	900.00
Total costs	$2,875.00	$2,800.00	$2,700.00	$2,550.00
Net profit	$ 137.75	$ 89.00	($ 60.00)	($ 307.50)

An examination of this proposal indicates that there is promise of increased profits through moderate price increases but that substantial increases will result in smaller profits or in losses. An increase of 3%

is estimated to reduce the physical volume by only 25 units or 2.5%, and to actually increase the money volume by $12.75 or 0.425%. A 7% increase in prices, however, appears too high as physical volume would be reduced by 100 units or 10% and money volume by $111 or 3.7%.

3RD PROPOSITION

A moderate increase in both prices and sales effort

Of the foregoing proposals, the ones which appear most profitable are 1 (b), 1 (c), and 2 (a). A combination of 1 (b) and 2 (a) constitutes a program wherein sales effort would be increased 33% and prices would be increased 3%. Such a program would appear as follows:

COMBINATION OF 1 (b) AND 2 (a)

Sales [The increased selling effort would have the effect of increasing unit sales by 20% or to 1,200 units. The increase in price would have the effect of reducing unit sales by 2.5% or to 1,170 units (97.5% of 1,200 = 1,170); [*] 1,170 units at $3.09]	$3,615.30
Fixed costs	$1,000.00
Variable costs:	
Production (1,170 units at $1)	1,170.00
Selling [as in 1 (b)]	1,200.00
Total costs	$3,370.00
Net profit	$ 245.30

[*] A technical error may be noted here in combining two interrelated factors. The estimate of the sales department that an increase of 33% in selling effort would result in increased unit sales of 20% when the price is $3 per unit, might not hold true when the price is $3.09 per unit. Likewise, the estimate that an increase in prices of 3% will reduce unit volume by 2.5% when the starting volume is 1,000 units might not hold true when the starting volume is 1,200 units. This objection is, however, largely theoretical. For all practical purposes such combinations can be made.

A combination of 1 (c) and 2 (a) would constitute a program wherein selling effort would be increased 56% and prices would be increased 3%. Such a program would appear as follows:

COMBINATION OF 1 (c) AND 2 (a)

Sales (1,300 units reduced by 2.5% equals 1,267.5 units; 1,267.5 units at $3.09)	$3,916.58
Fixed costs	$1,000.00
Variable costs:	
Production (1,267.5 units at $1)	1,267.50
Selling [as in 1 (c)]	1,404 00
Total costs	$3,671.50
Net profit	$ 245.08

It is now apparent that the most profitable program is one representing a combination of propositions 1 (b) and 2 (a) or an increase in sales effort of approximately 33% and an increase in prices of approximately 3%. Such a program indicates a possibility of increasing profits from $100 to $245.30.

This program will increase money volume from $3,000 to $3,615.30 or an increase of 20.5%; and physical volume from 1,000 units to 1,170 units or an increase of 17%. The increase in money volume will call for a corresponding increase in receivables and the increase in physical volume for a similar increase in inventories. It may be assumed that these will result in additional requirements for working capital of approximately $200 (20% of present current assets of $1,000). This can be provided from the additional profits. The present profit is $100 per year of which $60 must be used for preferred dividends, leaving only $40 to strengthen the current ratio. With profits of $245.30, the amount of $185.30 per year will be available as additional working capital. This will come near to providing the additional working capital in the first year and will lead to substantial improvement in the second year.

If the executive group is thinking in terms of specific volumes, then the operating results at these levels should be determined and presented. However, there may be an advantage in constructing break-even charts on the various proposals so as to show the results in other near-by areas.

A Break-Even Sales Control Chart. The possible adaptations of the break-even analysis are almost limitless, and much effective work can be done through the use of charts to outline to management the position of the company. An example is shown in Figure 84. As this chart shows, eight months of sales are required to cover fixed and variable costs; and profits are realized only during the last four months. This condition is evidenced by the intersection of the break-even line and sales volume line in August.

Value of Charts and Computations. While such charts and formula computations as those illustrated in the preceding topics are useful in visualizing the possible directions in which to move under given conditions, and in testing the desirability of various proposals, their value must not be overemphasized. There is no chart or formula which automatically points to the most profitable route of business operations.

Controllers can make extensive use of charts and formulae in their own analyses of important relationships, and charts are sometimes useful as illustrative material in executive conferences. However, it

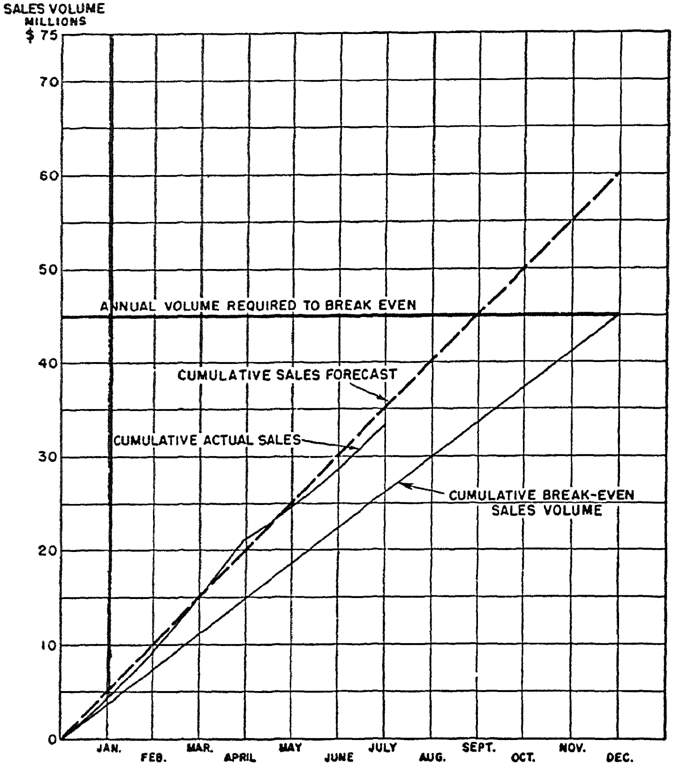


FIGURE 84. Break-Even Sales Control Chart

is the experience of the authors that such charts are most valuable when they are extremely simple, and when accompanied by oral or written commentary of a nonaccounting nature.

A Few Generalizations. The primary purpose of examining the cost-volume-profit relationship, of course, is to understand the economic structure of the company and permit of more intelligent planning for future profits. Contact with the problem will very often suggest remedies. While continual review and use of the break-even data is the best way in which to become thoroughly familiar with the effect of any given plan of action, some generalizations may be helpful:

1. A change in the *amount* of *fixed* costs changes the break-even point by a similar percentage and the operating profit by a like amount, but does not affect the marginal income ratio.
2. A change in the selling price changes the break-even point and marginal income ratio. Such a change, percentagewise, may be

quite different in the effect on the marginal income ratio than a similar percentage change in variable costs.

3. A change in variable costs, likewise, changes the break-even point and marginal income ratio.
4. When the marginal income ratio is high, large profits may result from comparatively small increases in sales volume above the break-even point. For the same reason, small declines in revenue will cut sharply into profits. By like token, a low marginal income ratio requires considerable change in sales volume to reflect any significant change in profits.
5. A high margin of safety indicates a substantial drop in sales volume can take place before losses develop.
6. When certain conditions exist, some general conclusions as to points of attack can be suggested. For example:
   a) A high marginal income ratio with a low margin of safety probably indicates an excess of fixed costs for the sales volume. The remedy lies in either reducing such fixed costs or increasing the sales volume.
   b) A low marginal income ratio and a low margin of safety may indicate that selling prices are too low, or variable costs are too high. If prices are as high as competition will allow, then variable costs should be combed for possible reductions.

Chapter 25

PLANNED PROFIT CONTROL—APPLICATION

An Illustrative Analysis. When net losses crop up or when profits are not satisfactory, and such a condition appears to persist, the task of making a critical review of the operations may well fall to the controller or budget director. He should encourage the preparation of such an analysis for it represents an opportunity to render a real service. Illustrated in this section is an analysis prepared as the basis for executive discussion by the officers of an integrated chemical company. In this case, it is assumed that the company has operated heavily in the red in one of three divisions, and the management can see no immediate prospects of improving the condition.

The general steps in the analysis, while partially evident from accompanying figures, are outlined as follows:

1. The operations for the past year were reviewed to secure some indication of the nature of the costs, and the points of apparent waste or excessive costs.
2. Unit standard costs, budgets, and variances were analyzed and segregated into their fixed and variable elements.
3. Sales were analyzed to determine a representative product mixture, by certain commodity groups.
4. With known product mixture, total costs and income at capacity were determined.
5. On the basis of information determined in step 4 above, profit graphs were prepared.
6. Within each product group, marginal income for each product was determined so as to suggest a more profitable sales mixture.
7. The data were interpreted in a narrative report containing recommendations for improvement.

The report on the profit analysis is as follows:

CHEMICAL MANUFACTURING CORPORATION
CHICAGO DIVISION
REPORT ON PROFIT POTENTIAL AND BREAK-EVEN POINTS

GENERAL COMMENTS

Operations at the Chicago Division for the year ended December 31, 1955, resulted in a net loss of $730,142.

It may be taken for granted that the past year was one of experimentation and inefficiency which might be expected normally as a part of the start-up cost of a new plant. However, the question which now can be asked is "What is the normal profit expectancy, now that operating experience has been gained?" Other questions frequently posed include these:

1. Would the company as a whole have lost less if the Chicago Division had not operated?
2. What are the earning possibilities of the Division?
3. What are the break-even points of the three major product lines?
4. What action can be taken to minimize losses or increase profits?

It is hoped that some of the facts and opinions expressed in this report will stimulate thinking as to possible corrective action.

Operations for the Year 1955

A summary of operating results is presented in Figure 85. The net loss of $730,142 represents 35.95% of net sales. It will be observed that the standard gross margin is only 13.25% of net sales, and that it was insufficient to cover the operating expenses. If the plant had operated close to capacity the excess fixed costs of $268,082 would have largely disappeared.

CHEMICAL MANUFACTURING CORPORATION
CHICAGO DIVISION
STATEMENT OF INCOME AND EXPENSE
For the Year Ended December 31, 1955

		Amount	Percent of Sales
Net Sales		$2,030,958	100.00
Cost of Sales			
At Standard:			
Material	$1,515,062		
Variable Expense	82,705		
Fixed Expense	164,022	1,761,789	86.75
Standard Gross Margin		$ 269,169	13.25
Over Standard:			
Material	$ 168,305		
Variable Expense	135,182		
Fixed Expense	268,082	571,569	28.14
Manufacturing Loss		$ 302,400	14.89
Operating Expenses		441,639	21.74
Operating Loss		$ 744,039	36.63
Other Income (Net)		13,897	.68
Net Loss		$ 730,142	35.95

FIGURE 85. Statement of Income and Expense

Furthermore, the additional income, even at a low margin rate, probably would have been sufficient to offset a major share of the excess manufacturing costs and operating expenses. Even at the higher volume level, the results would have been disappointing.

However, the over-all company losses for the year would have been greater if the Chicago Division had not operated. This results from the fact that the sales income was greater than the direct out-of-pocket charges. A balance was available to cover either a share of the general office expenses, or Illinois Division expenses, or the depreciation and insurance costs which would have continued. The net advantage of operating the Chicago Division was $185,646, calculated as follows:

Net Sales		$2,030,958
Other Income (Net)		13,897
Total		$2,044,855
Deduct:		
Direct Out-of-Pocket Costs		
Material	$1,683,367	
Expenses	175,842	1,859,209
Income in Excess of Out-of-Pocket Costs		$ 185,646

This gain is reconciled with the net loss in this manner:

Allocated Expenses	
Illinois Division Expenses	$510,859
General Offices Expenses	214,114
Total Allocated Expenses	$724,973
Continuing Fixed Charges—Depreciation, etc.	190,815
Total Costs	$915,788
Deduct:	
Income in Excess of Out-of-Pocket Costs	185,646
Net Loss	$730,142

It is to be observed that the fixed charges of $190,815 would not have been incurred if the Chicago Division properties had not been purchased, and that they will continue until the property is either fully depreciated or disposed of. Moreover, the income in excess of out-of-pocket expenses, an amount of $185,646, was almost enough to cover the continuing fixed charges.

PROSPECTS FOR THE FUTURE

The severe losses of last year have prompted a thorough review of future possibilities. After extensive discussions with the General Sales Manager and Works Manager, together with a critical analysis of present sales trends and expected cost levels, it appears that present plans would result in an operating profit, at plant capacity, of $28,727 per month or $344,724 per year. While this is more encouraging than a loss of $730,142, yet over-all profit is only 5.97% of net sales. The condensed statement by product lines is shown in Figure 86. A most serious aspect is the almost total lack of profit, even at capacity levels, on our most voluminous product—paints. Quite in contrast, the coke by-products show a possible operating profit of 19.31% of net sales at capacity.

The Chicago Division, of course, has not yet attained a 100% of plant capacity sales volume.

Profit Potentials at Various Volume Levels

Because the Division may experience several different monthly sales and production levels, it has been felt desirable to construct profitgraphs so that the operating profit on any of the three product lines may be anticipated with a reasonable degree of accuracy. These are illustrated in Figures 87, 88, and 89. The probable profit or loss at any selected volume level is measured by the vertical difference between the sales income line and total cost line at that level. For example, at a 50% plant capacity level, the operating profit or loss would be about as follows:

Product	Sales Volume at 50% Level	Monthly Operating Profit or (Loss)
Paints	$141,025	$(17,687)
Ammonia Derivatives	51,810	(5,423)
Coke By-Products	59,410	73
Total	$252,245	$(23,037)

These figures have been calculated, but a close approximation can be read on the graphs.

These charts also indicate the break-even points at which income balances expense. The break-even points are quite dissimilar:

	Break-Even Point		
		Sales Per Month	
Product	% of Five-Day Capacity	Pounds	Dollars
Paints	98.7	1,415,161	$278,423
Ammonia Derivatives	73.4	383,148	76,094
Coke By-Products	49.9	228,043	59,249

The details of costs and income on which these break-even points are predicated are available, should you wish to discuss them.

The chief problem of the Chicago Division centers about the paint line, where a plant capacity operation is required in order to avoid a loss. This is, indeed, a disturbing condition; and the remaining comments relate chiefly to this product line.

CHEMICAL MANUFACTURING CORPORATION—CHICAGO DIVISION
STATEMENT OF ESTIMATED INCOME AND EXPENSE
At Plant Capacity (5-Day Week)
For One Month

	PAINTS			AMMONIA DERIVATIVES			COKE BY-PRODUCTS			TOTAL		
Description	Amount	Per Cwt.	% Net Sales	Amount	Per Cwt.	% Net Sales	Amount	Per Cwt.	% Net Sales	Amount	Per Cwt.	% Net Sales
Net Sales Before Freight Allowance..	$282,050	$19.6742	105.26	$103,617	$19.8500	104.81	$118,820	$26.0000	103.96	$504,487	$20.9105	104.86
Less: Freight Allowance............	14,099	.9835	5.26	4,754	.9107	4.81	4,521	.9893	3.96	23,374	.9688	4.86
Net Sales........................	$267,951	$18.6907	100.00	$ 98,863	$18.9393	100.00	$114,299	$25.0107	100.00	$481,113	$19.9417	100.00
Cost of Sales												
Variable........................	$231,657	$16.1591	86.45	$ 75,621	$14.4868	76.49	$ 70,308	$15.3847	61.51	$377,586	$15.6506	78.48
Fixed..........................	16,010	1.1168	5.98	9,442	1.8088	9.55	13,554	2.9659	11.86	39,006	1.6168	8.11
Total Cost of Sales............	$247,667	$17.2759	92.43	$ 85,063	$16.2956	86.04	$ 83,862	$18.3506	73.37	$416,592	$17.2674	86.59
Manufacturing Profit..............	$ 20,284	$ 1.4149	7.57	$ 13,800	$ 2.6437	13.96	$ 30,437	$ 6.6602	26.63	$ 64,521	$ 2.6743	13.41
Operating Expenses...............	19,823	1.3827	7.40	7,603	1.4565	7.69	8,368	1.8311	7.32	35,794	1.4836	7.44
Operating Profit..................	$ 461	$ .0322	.17	$ 6,197	$ 1.1872	6.27	$ 22,069	$ 4.8291	19.31	$ 28,727	$ 1.1907	5.97
Pounds Manufactured and Sold.....	1,433,600			522,000			457,000			2,412,600		

FIGURE 86. Statement of Estimated Income and Expense by Product Lines

PAINTS—RECOMMENDATIONS

In reviewing the profit structure, a detailed analysis was made of each of the more popular items in each product group. The hundredweight data and marginal income per machine or kettle hour are shown in Figure 90. It will be observed that items 103 and 105 contribute the greatest income over variable expense, per machine hour, to help meet the fixed expenses, income taxes, and profit. It would seem desirable, and is possible in the

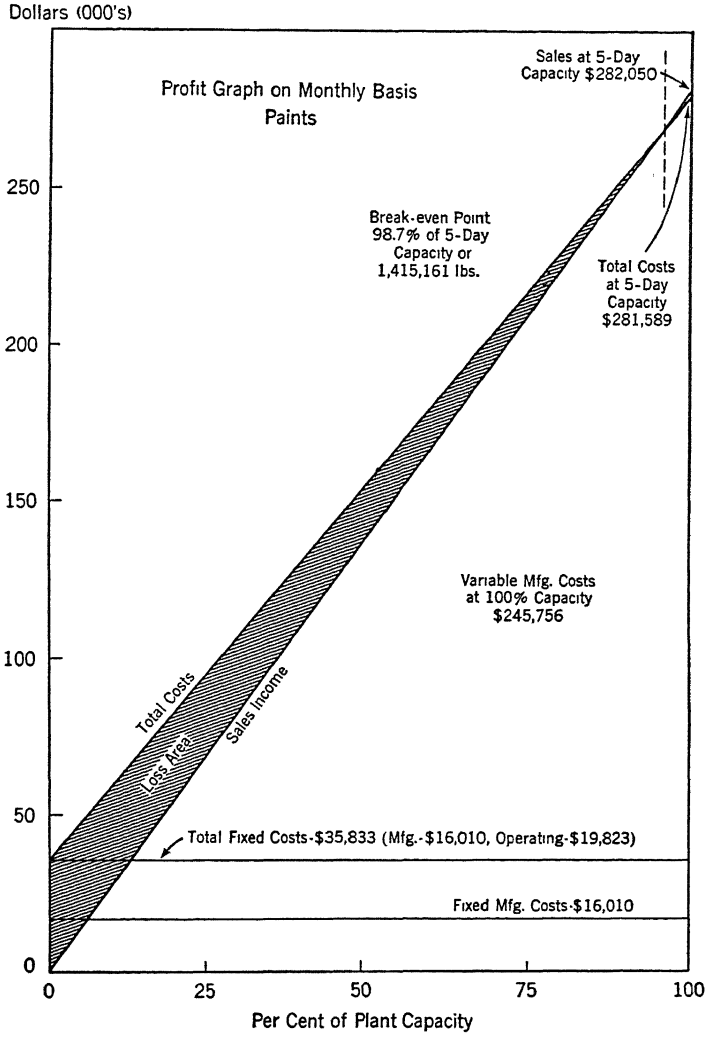


FIGURE 87. Break-Even Chart—Paint Works

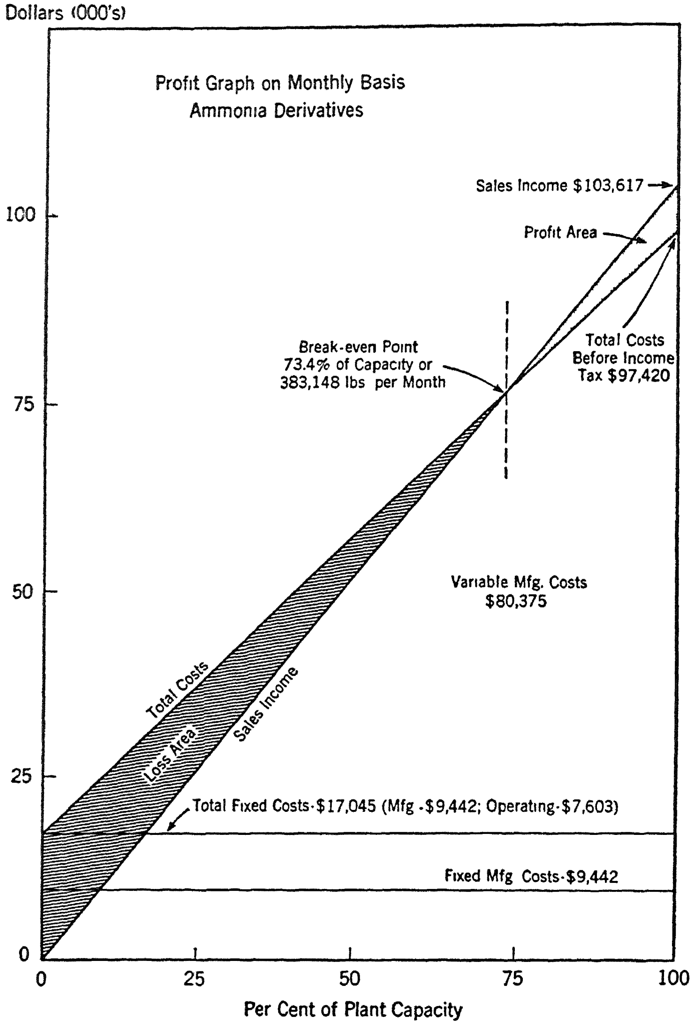


FIGURE 88. Break-Even Chart—Ammonia Plant

opinion of the General Sales Manager, to increase the proportion of sales of these two items. As items 102 and 104 contribute the lowest marginal income, these should not be promoted. Of course, until the system is at capacity, every drum of paint sold helps reduce losses or increase profits.

A review of sales indicates that 85% of the volume is secured from 15% of the customers. Furthermore, from what information we piece together it appears our operating expenses are out-of-line with our competitors. There is some indication, also, that the cycle time in production is on the

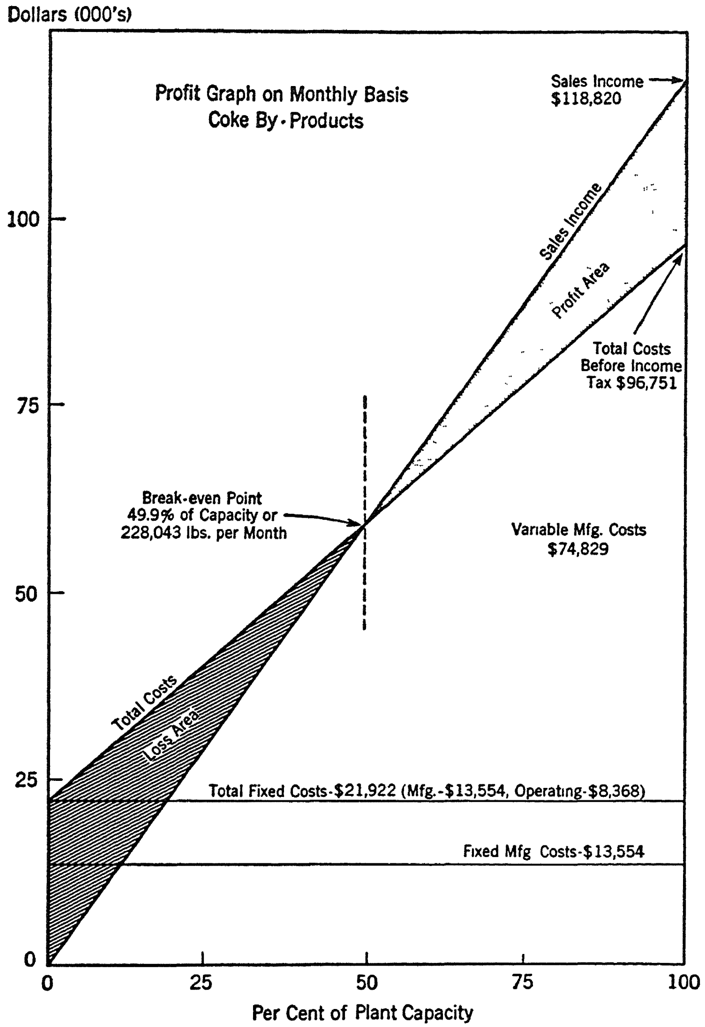


FIGURE 89. Break-Even Chart—Coke By-Product Plant

high side. The Works Manager is of the opinion that reductions can be made in production time. Such improvement would, of course, reduce the variable cost per hundredweight and increase the plant capacity and therefore the potential marginal income.

On the basis of available information, it is recommended that immediate steps be taken to:

1. Reduce selling expenses (fixed costs) by $2,200 per month through the release of three salesmen. The remaining staff can readily cover our large volume customers and contact other possible users.

CHEMICAL MANUFACTURING CORPORATION
CHICAGO DIVISION
COMPARATIVE UNIT COSTS AND INCOME

	Sales Price	Variable Costs				Marginal Income	Fixed Costs and Expenses	Operating Profit or (Loss)	Per Machine Hour	
		Material	Con- tainer	Other	Total				Pro- duction (lbs.)	Marginal Income
Paints										
101	$20.00	$14.8633	$1.0093	$1.5929	$17.4655	$2.5345	$4.2681	$(1.7336)	1,032	$26.16
102	20.00	15.9866	1.0093	1.6464	18.6423	1.3577	3.5458	(2.1881)	884	12.00
103	20.00	13.9238	1.0093	1.6668	16.5999	3.4001	3.5666	(.1665)	943	32.06
104	22.00	17.4799	1.0093	1.5815	20.0707	1.9293	3.6981	(1.7688)	775	14.95
105	17.00	11.1554	1.0093	1.6248	13.7895	3.2105	3.1721	.0384	852	27.35
106	21.00	15.1134	1.0093	1.5848	17.7075	3.2925	3.5831	(.2906)	774	25.48
Ammonia Derivatives										
205	19.00	12.3926	.4364	1.7654	14.5944	4.4056	3.8752	.5304	963	42.43
206	20.00	12.5995	.4364	1.7270	14.7629	5.2371	3.7995	1.4376	947	49.60
207	20.00	13.0861	.4364	1.7281	15.2506	4.7494	3.7313	1.0181	985	46.78
208	20.00	14.9536	.4364	1.8108	17.2008	2.7992	3.5728	(.7736)	1,032	30.40
Coke By-Products										
301	26.00	12.2632	1.2749	2.5863	16.1244	9.8756	4.7988	5.0768	895	88.39
302	26.00	10.9973	1.2749	2.7266	14.9988	11.0012	3.9772	7.0240	831	91.42

FIGURE 90. Comparative Unit Costs and Income

CHEMICAL MANUFACTURING CORPORATION
CHICAGO DIVISION—PAINTS
DETERMINATION OF STANDARD MARGINAL INCOME AT CAPACITY

	Present Sales Mixture			Change in Sales Mixture			10% Reduction in Cycle Time		
Product	**(000's) Pounds**	**% Total**	**Marginal Income**	(000's) Pounds	% Total	Marginal Income	(000's) Pounds	% Total	Marginal Income
101	235.2	16.4	$ 5,961.14	235.2	16.6	$ 5,961.14	261.3	16.3	$ 6,725.34
102	235.2	16.4	3,193.31	117.0	8.3	1,588.51	130.4	8.1	1,821.95
103	336.0	23.5	11,424.33	461.0	32.6	15,674.47	512.0	31.8	17,637.38
104	156.8	10.9	3,025.15	77.5	5.4	1,495.21	86.0	5.4	1,695.06
105	313.8	21.9	10,074.54	400.0	28.3	12,842.00	444.6	27.6	14,453.06
106	156.8	10.9	5,162.65	124.6	8.8	4,102.46	173.1	10.8	5,761.98
Total......	1,433.8	100.0	$38,841.12	1,415.3	100.0	$41,663.79	1,607.4	100.0	$48,094.77

FIGURE 91. Statement of Standard Marginal Income Giving Effect to Changes in Products Sold and Manufacturing Efficiency

2. Emphasize the more profitable products, increasing the proportion of 103 and 105.
3. Concentrate on a reduction of cycle times by 10%.

The effect of each successive action, detailed in Figure 91 as to marginal income, would be as follows:

Action	Break-Even Sales Volume (Monthly)	Monthly Operating Profit at Capacity
Present plans ....(a)	$278,400	$ 461
Reduce fixed expenses by $3,300 per month ....(b)	252,800	3,761
Change sales mixture to higher proportion of profitable items, plus (b) ....(c)	214,000	9,131
Reduce cycle time by 10%, plus (b) and (c)	210,770	15,561

The accomplishment of these objectives would result in a net profit of 5.0 of sales at capacity.

The profit graph on paints, with these changes incorporated, would appear as in Figure 92. As a long-range program, research should be intensified on material costs so as to increase the margin of selling price over such costs. Since the net profit as a percentage of investment, even with the improved results, would not be satisfactory, perhaps consideration can be given to new product lines with higher margins that could advantageously be manufactured in the paint facilities.

Further details can be made available as requested.

BUDGET DIRECTOR

Summary. An understanding of the economic structure of the business—the cost-volume-profit relationship—is a prerequisite to the making of sound business recommendations by the controller or budget director. Such knowledge facilitates the reaching of intelligent conclusions as to specific problems, viz. the desirability of plant expansion, the probable effect of increased selling prices at various sales levels, or the result of volume changes on unit costs. The use of such data is required in day-to-day business decisions, and is equally applicable in the budget procedure itself. The marginal income ratio, as well as other relationships, should be utilized in testing the business plans. As has been stated many times, many business problems are a matter of selecting alternatives. So it is in developing the budget. The same principles can and should be applied in selecting the most appropriate program.

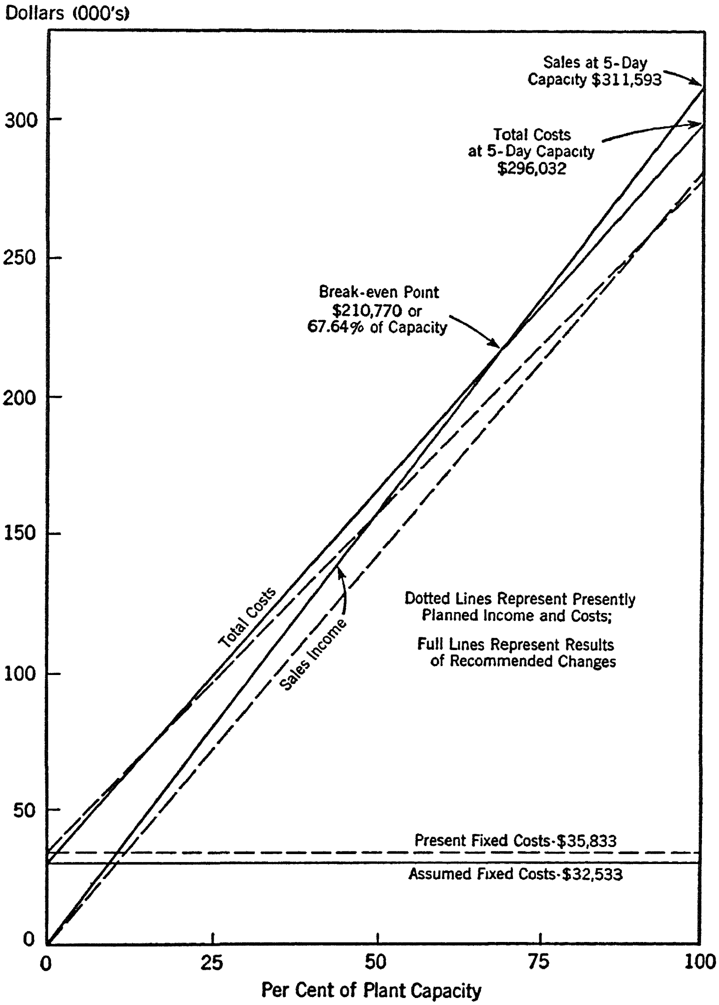


FIGURE 92. Profit Graph, Giving Effect to Changes in Income and Costs—Paint Works

Chapter 26

THE HUMAN ASPECTS OF BUDGETING

Budgets and People. For a great many years business management has developed and refined tools for the more efficient operation of the oftentimes complex business organization. The chief accounting executive has played an important part in this evolution, which has included standard costs, quality control, production planning and scheduling, and statistical analyses, as well as budgeting. It may be taken for granted that much good has been accomplished. However, those who have had to work with budgets know that, because of problems in human relations, the most effective utilization of the tool quite often has not been realized. Indeed, there are those of the opinion that over the longer run the budget may generate forces which tend to *decrease* efficiency by reason of the human problem.

Because the budget is, among other things, a device to control costs through *people,* the authors are of the opinion that increased emphasis must be given to the human relations aspects of the subject. In fact, this human phase of budgeting must be ranked as of equal importance with the technical aspects when it comes to achieving full budgeting effectiveness. In this chapter several facets of this side of budgetary control are explored.

Human Problems and Budgets. Perhaps because accountants themselves in many instances have done a poor selling job on budgets, there is some evidence of a negative reaction to this type of control—a reaction which indicates the budget is sometimes poorly used as a pressure tool in an attempt to increase efficiency. Illustrative are the tentative conclusions regarding the human relations problems and budgets as applied to certain factory operations:[1]

1. Budget pressure tends to unite the employees against management, and tends to place the factory supervisor under tension. This tension may lead to inefficiency, aggression, and perhaps a complete breakdown on the part of the supervisor.

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[1] From "The Impact of Budgets on People," by Chris Argyris, published by Controllership Foundation, Inc. (New York), March, 1952, p. 25.

2. The finance staff can obtain feelings of success only by finding fault with factory people. These feelings of failure among factory supervisors lead to too many human relations problems.
3. The use of budgets as "needlers" by top management tends to make the factory supervisors see only the problems of their own department. The supervisors are not concerned with the other people's problems. They are not "plant-centered" in outlook.
4. Supervisors use budgets as a way of expressing their own patterns of leadership. When these patterns result in people getting hurt, the budget, in itself a neutral thing, often gets blamed.

These conclusions are certainly evidence of the need for a better approach to the human side of the budget. And the basic question is just what can be done to make the budgets a better tool.

Cooperation is the Key Word. Throughout this volume the authors have stressed the need for cooperation. It will bear repeating, again and again, that the first prerequisite in effective budgeting is a *willingness* on the part of each echelon of management to participate in the preparation of a budget, and to be judged against it. The budget must be viewed, not as a pressure tool, but as a challenge, a goal, an objective, that can be attained and surpassed. This *positive* thinking must be encouraged and stimulated continually in all areas of management. It is no mere "once a year" procedure, although the planning phases may be emphasized somewhat more during the preparation of the annual forecast.

It should be clearly understood that the decisions reflected in the budget are largely those of operating management and not the accountant. To be sure, the over-all production or sales objectives of the plant cannot be set by the members of an individual department. This is a top level decision. But the manner in which the goals are to be accomplished should rest upon the interested cooperation of the affected employees. The accountant does not make those decisions. He may counsel the operating management, and act as a coordinator; but the decisions are the responsibility of operating management. Stated in other words, top management should make certain that real participation, and not half-hearted acquiescence, is the manner in which decisions are reached as to proper budgets. Too often the budget director talks in highly technical terms which the operating staff does not understand. Under such circumstances, any participation by the operating staff, particularly in the lower echelon of management, is purely superficial. Properly used, a budget can and should be a stimulus to improved efficiency. Those who must do the actual controlling will find ways and means of achieving savings which the front office couldn't even imagine.

Cooperation in Making Budget Estimates. It is perhaps easy to talk in general terms about cooperation between the operating group and the budget staff. What is more to the point are some specific suggestions. Consider, first, the preparation of the original budget, or the making of revisions, an area which requires cooperation. This is a time when the budget supervisor or budget representative has much to gain by listening more and talking less. In these early meetings, particularly when the budget is new, there is oftentimes considerable apprehension as to the purpose of the get-together. Letting the operating man express his ideas will aid in establishing mutual confidence. Moreover, by careful listening, the budget manager will very often secure information about future events which is not obtainable elsewhere. Further, he will learn to know the supervisor better and thus lay the foundation for future participation.

Since the operating heads and foremen are not trained accountants they will need considerable help in making calculations. The accountant should render every bit of assistance that he can. He will have available data on past experience and will be able to detect efforts to secure a higher budget basis than is necessary. The budget manager should, of course, realize the limitation of past experience figures. To this end, the foremen or other representatives should be encouraged to express openly and freely their opinions based on their intimate knowledge of their own departments.

Hostility to a thing is often caused by lack of understanding. It therefore behooves the budget manager to avoid technical accounting jargon, and dispel any mystery about the budgeting process. When this is done, a big step is taken forward in securing willing cooperation.

Cooperation in Reviewing Actual Performance. The full use of the budget depends on spotting unfavorable trends and taking corrective action so as to avoid a recurrence. In this operating and control area, also, cooperation is necessary. By and large, department supervisors and foremen take pride in the efficient operation of their departments. They usually want to do a good job, and will accept all reasonable help.

Some of this assistance can be given in the utilization of the budget report. It is perhaps to much to expect any supervisor to make the most use of the budget report unaided. Very often much analysis must be made to determine the reason for the variation. This calls for "operation teamwork" wherein the efforts of the accountant, the engineer, the department supervisor, and sometimes others, should be combined to secure the best solution to the operating variance. When the department supervisor feels he can call for the help of these co-workers in making his part of the program a success, it is then that the dynamic nature of budgetary control shows itself.

In this area of human relations, one of the primary criticisms directed against budget reports is that they show results but not reasons.

THE MANUFACTURING COMPANY
COMMENTS ON DEPARTMENT 62 BUDGET PERFORMANCE
May, 1955

A budget report is simply a story. And the story about Department 62 is a good one because performance was better than budget in every category except direct labor.

What we know about the excess labor cost of $2,069 in Department 62 is this (with the details from source data):

Item	Budget	Actual	Actual (Over) Under Budget
Cost (labor)	$7,545	$9,614	$(2,069)
Due to:			
Operating hours over allowed (32 hrs. × 5.75 m/h × $1.533)			$ (282)
Other excess man hours (1,121 at $1.533)			(1,718)
Labor rate paid over standard			(69)
Total			$(2,069)
Operating hours	856	888	(32)
Man-hours	4,922	6,227	(1,305)

These man-hours can be detailed by job code in this manner:

Code				
1	Ageing Tank Operator	428	602	(174)
2	Dryer Operator	428	535	(107)
3	Shredder Operator	856	825	31
4	Baker Operator	428	530	(102)
5	Mixing Tank Operator	428	432	(4)
6	Pulp Man	856	728	128
7	Urea Man	428	500	(72)
8	General	428	779	(351)
10	Utility	-	310	(310)
15	Relief	642	735	(93)
20	Training	-	170	(170)
50	Union Time	-	3	(3)
60	Idle Time	-	45	(45)
61	Experimental	-	33	(33)
		4,922	6,227	(1,305)

This tells *what* happened. You probably know *why* it happened. Let's discuss these over-runs and see if the engineers can help you.

FIGURE 93. A Simple Budget Analysis

This subject is discussed in Chapter 28. However, it should be mentioned here that insofar as practical, explanations as to the cause of variances, as viewed by the operating staff as well as the accounting staff, should be included. The reasons for the excesses or unfavorable variances should be shown.

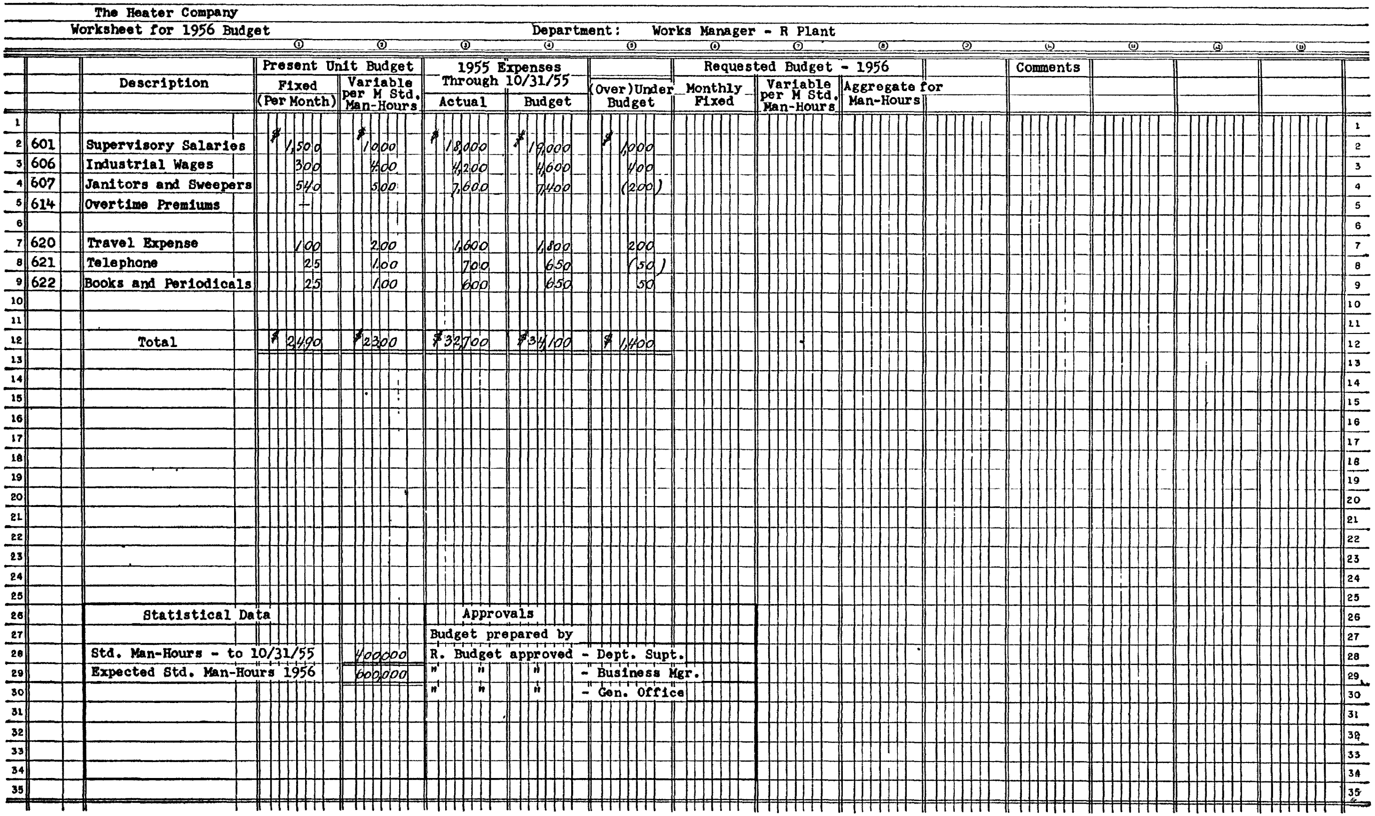
Illustrative Special Analyses. A few words are in order as to the special analyses which the budget staff may be asked to secure in assisting the operating supervisors. Fundamentally, these analyses are usually a break-down of costs which of necessity are grouped in the budget report. Such studies may take many forms; but the principle to be observed is a presentation in the language of the department supervisor. A sample type of analysis is shown in Figure 93. In this instance the department supervisor is provided with the details of the excess man-hours by occupation. He will review them and see what can be done. Very often tabulating reports may be used; but many times it is helpful to add some personal comments and make the figures seem more "friendly." Comparable analyses may be made of other cost elements, such as supplies, indirect labor, etc.

Patience Is Needed. Despite the talk of cooperation, there are some capable controllers or budget directors who feel that budget preparation, and sometimes budget reporting, is largely a one-man job, that time is wasted in gathering widespread suggestions and passing them through innumerable conferences, some of which, it must be admitted, are fruitless.

There is always a temptation to eliminate certain steps. Often the controller feels that if he can sit down in an intimate conference with each of the major functional executives and possibly with the chief division heads or branch managers, he can develop the detailed plans and avoid so many steps. This method is quicker and more direct and there can be no question but what it is successfully applied in some cases. As a general rule, however, the better results come from a continuous cultivating of the entire executive group from top to bottom.

While the controller or some designated official must actively direct the budget procedure, the chief executive must supply the executive force necessary to compel the execution of the procedure.

Use of Worksheets as Aids. Budget worksheets deserve comment when considering the human relations problems of budgeting. They can be of great assistance in maintaining good communications. If the operating staff is actually to participate, it should have the benefit of past experience. Standardized worksheets are a useful means of indicating the type of information needed. Moreover, they usually



The Heater Company

Worksheet for 1956 Budget

Department: Works Manager - R Plant

			①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	
			Present Unit Budget		1955 Expenses Through 10/31/55			Requested Budget - 1956				Comments				
		Description	Fixed (Per Month)	Variable per M Std. Man-Hours	Actual	Budget	(Over)Under Budget	Monthly Fixed	Variable per M Std. Man-Hours	Aggregate for Man-Hours						
1																1
2	601	Supervisory Salaries	$ 1,500	$ 1,000	$ 18,000	$ 19,000	$ 1,000									2
3	606	Industrial Wages	300	400	4,200	4,600	400									3
4	607	Janitors and Sweepers	540	500	7,600	7,400	(200)									4
5	614	Overtime Premiums	—													5
6																6
7	620	Travel Expense	100	200	1,600	1,800	200									7
8	621	Telephone	25	100	700	650	(50)									8
9	622	Books and Periodicals	25	100	600	650	50									9
10																10
11																11
12		Total	$ 2,490	$ 2,300	$ 32,700	$ 34,100	$ 1,400									12
13																13
14																14
15																15
16																16
17																17
18																18
19																19
20																20
21																21
22																22
23																23
24																24
25																25
26		Statistical Data			Approvals											26
27					Budget prepared by											27
28		Std. Man-Hours - to 10/31/55		400,000	R. Budget approved - Dept. Supt.											28
29		Expected Std. Man-Hours 1956		600,000	" " " - Business Mgr.											29
30					" " " - Gen. Office											30
31																31
32																32
33																33
34																34
35																35

FIGURE 94. Budget Estimate Sheet

facilitate the summarization of data as received from the various branches or departments.

The form and content of budget worksheets will, of course, depend upon the individual circumstances. However, the following information has been found useful:

1. Present budget, perhaps segregated as between fixed and variable allowances.
2. Level of activity contemplated.
3. Year to date experience, i.e., actual vs. budget.
4. Notes on any known future changes in cost levels.

An illustrative worksheet is presented in Figure 94, showing the data in connection with a general superintendent's department. It is to be observed that provision is made for approval and comments by the superintendent as well as his supervisor. While such worksheets can be mailed with an explanatory letter requesting the budget information, there are advantages in having it personally delivered by a budget representative and supplemented with oral comments and suggestions.

Incentives and the Budget. Yet another aspect of the human side of budgeting has to do with the use of incentives. The additional appeal or motivation to meet or exceed the budget which additional monetary reward might bring is not to be overlooked. To be sure, the adoption of an incentive system will bring with it some additional problems. For example, there will be areas where fair budgets will be difficult to set. And there will be times when the conscientious supervisor will feel his reward was unfair as compared with a fellow worker. Yet, in few instances would this same man vote to eliminate the incentive plan. It is the experience of the authors that fair administration of an incentive plan as applied to budget performance will stimulate additional effort and effectiveness.

Organizing Properly for the Budget. Another prerequisite to effective budgeting, and still a part of the human relations phase, is sound organization structure. Duties and responsibilities must be clearly defined, not only as to the budget department itself but also throughout the entire organization. In fact weaknesses in this area will be revealed as the budget is developed. This problem is discussed in detail in Chapter 3; and the human side should not be overlooked.

Installation of the Budget. The work involved in the development of a complete budget program should not be underestimated. It is a slow and laborious process. It is seldom indeed that it can be worked out and installed as a single unit. Much ground work must be laid and much educational effort is necessary. The best procedure is to begin in a small way, usually in one department, and gradually extend the procedure to the company as a whole. In one sense the work is never finished as the constant change in business methods requires a continuous revision in the budget and control procedure.

Several points should be stressed in the work of installation. In the first place, there must be an adequate background of information. This involves such matters as complete analysis of past sales, market research, distribution and production cost standards, and detailed records of inventories and plant items. If these are not available, their provision becomes the starting point of the work of budgeting and control procedure. Next, there must be definite lines of authority and responsibility. Finally, the organization must be educated to the merits of budget procedure. Executives—both major and minor—resent dictatorial force. While they may follow orders, they will do so with little initiative and enthusiasm unless they are convinced the plan has merit. All of this requires time and emphasizes the necessity of proceeding slowly.

It is usually best to start the work with certain cost items that are readily controllable, as it is in these items that the value of budgeting is most quickly apparent to the organization.

As a final word it may be stated that a budget program need not be complete to be useful. Many concerns which have extended their budgeting procedure only to certain departments or operations have found the results to be extremely valuable.

The work of initial installation of the budget procedure may be directed by the controller or some other internal officer backed by proper executive authority, or it may be directed by outside consultants. The controller has the advantage of more intimate and detailed knowledge of the business, while the consultant is less subject to bias and prejudice and may have the advantage of wider experience. Except in large concerns, where a specialized staff can be employed, the best results usually come from the combined efforts of the controller and a *qualified* consultant. In any event, the major work of maintaining satisfactory budget procedure will fall upon the chief accounting officer and his staff.

A Check List Guide to Better Budgeting. The success of the budget program may well hinge upon proper administration, for the human element is so important. To assist the budget officer of any company in initiating and selling a sound budget system, the Committee on Management Planning and Control of the Controllers Institute of America prepared the following check list of "do's and don'ts."

It is not intended to be all inclusive, but it does contain many excellent points presented in an easy-to-understand manner.[2] A great many of the points relate to human relations; and those that pertain to the technical phases of budgeting are certainly pertinent from the administrative viewpoint.

1. The Following Points Should Be Considered with Respect to Budgeting Policy, Organization and Preparation

A. *Budgeting Policy*

DO	DON'T
1. Use an organization or operation chart to show the functional responsibility of each executive whose activities justify a separate budget.	1. Don't install a budget system if management is unwilling to accept or comply with full cooperation.
2. Make certain that the final responsibility for execution of the budget rests with top management. If top management does not really desire a budget, and your efforts to promote the principle are unavailing, better abandon the thought altogether.	2. Don't fail to secure executive approval of budgets before issuing statements.
3. Adapt the budget procedure to the needs of the organization, viz: cash requirements, inventories, capital assets, sales, expense control, etc.	3. Don't divide responsibility below the level of policy determinations.
4. Remember that it is a basic principle of budgeting procedure that the preparation of and responsibility for a sound budget rests with the respective department heads and not with the budget officer. The budget officer should, at all times, be considered as a consultant or advisor to the operating heads of a business.	4. Don't let the budget be a creation of the budget officer alone. It is essentially an operation function of department heads. The budget officer is the coordinator and advisor. Variances from budget are then the responsibility of the department supervisor to explain.
5. Determine management's objectives as to the economy as a whole, competition within industry, internal expansion, and operating efficiency before establishing the forecast.	5. Don't place budget authority in hands of anyone with partisan influences.
6. Arrange educational meetings to obtain cooperation in the successful operation of a budget.	6. Don't force budgets on department heads. Make the budget a joint venture. Work out the results together.
7. Plan ways and means of keeping everyone interested in the planning and control program. For example: use "teaser" reports to stimulate interest in budgeting.	7. Don't present a master budget plan without consulting all parties concerned.
8. Provide for detailed review and approval of program before expenditures are permitted for items included in budget. Accept approvals of divisional supervisors up to specified limits to save time of general executives.	8. Don't classify all capital expenditures on the same basis. Consider as "Urgent," "Current," or "Desirable" projects.

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[2] From *The Controller,* Vol. XVIII, No. 12 (Controllers Institute of America), pp. 550-53.

DO	DON'T
9. Require specific approval for projects not budgeted and for expenditures in excess of stated amount or percentage compared with budgeted amount.	
B. *Organization of Budget Department*	
1. Be properly staffed for the budgeting job. Judicious expenditures for this department will pay dividends.	1. Don't fail to have a definite plan for the administration of the budget after it is established.
2. Vigorously and continually sell the values of practical budgeting. Promote it up the line of authority and down the line of authority. Design it. Dress it. Enthusiastically tout it at every opportunity —written and spoken.	2. Don't try to perfect the budget immediately.
	3. Don't overlook the unique opportunity afforded to the budget director to act as a liaison officer between the various operating and staff departments.
C. *Preparation*	
1. Select the toughest foreman or division head in the company and sell him on it, then watch the gospel spread.	1. Don't permit anyone on the budget staff to have an indifferent attitude toward budgeting. An enthusiastic attitude is a requisite of a successful budget staff.
2. Express budget objectives and plans in writing. Supplement written material with verbal instructions when necessary.	2. Don't fail to keep and circulate an up-to-date budget procedure or budget manual. Refer to it frequently.
3. Budget accounts must correspond with the established chart of accounts.	3. Don't fail to praise individuals who are responsible for good planning and performance and don't fail to assist those whose planning is below par.
4. Prepare master budgets from summaries of departmental budgets.	4. Don't depend entirely upon a tailor-made budget from a publication. A general outline of a budget may be available for a particular industry but usually this form will require an adaptation to your specific requirements.
5. Classify expenditures carefully and diligently. Avoid arbitrary allocation of expenses between departments.	
6. Make the budget easy to accept—offer to test or trial run your ideas.	

II. THESE CONSIDERATIONS SHOULD ENABLE YOU TO DO A BETTER JOB OF PLANNING AND FORECASTING

A. *Planning*	
1. Do an adequate job of research before starting to forecast.	1. Don't budget too far in advance. Short term budgets (usually for one year or less) permit more realistic comparisons with actual results and they also permit closer adjustment to changing conditions.

DO	DON'T
2. Make provisions in the budget for every principal activity.	2. Don't depend exclusively on past experience. Keep an open and inquiring mind for cost reduction, otherwise inefficiencies are cultivated.
3. Furnish past performance guides to each Department executive for preparation of future budgets. Explain unusual and non-recurring items.	3. Don't oppose current and future trends in forecasting without adequate reasons therefor.
4. Classify expenses realistically as between variable, semi-variable and fixed categories.	4. Don't prepare budgets until determination of plant production goals are established.
5. Budget net results in point of cost per unit when possible. Reach the lowest possible common denomination that will highlight the results of budgeting.	5. Don't prepare budgets until determination of personnel required for all phases of operations is established.
6. Have alternate plans available for emergencies. Variable budgets are widely used for this purpose.	6. Don't release your forecasts without thorough study.
7. Carefully consider discontinuance of low margin lines or the effect of new product lines.	7. Don't set budgets on variable rates too tight. To be stimulating, rates must be on a basis that will permit a better-than-even chance of attainment.
	8. Don't criticize too often.
	9. Don't recommend planning as a panacea for all evils.
B. *Forecasting*	
1. Base the sales budget on a reasonably attainable and expected volume of sales, neither too optimistic nor pessimistic.	1. Don't establish a budget that is too elaborate at the outset. It is better to start with a basic operation setup and enlarge the scope as conditions warrant.
2. Set production budgets on sales volume after considering existing inventories and the effect of inventory fluctuations and purchasing policies.	2. Don't overlook external statistics and assistance.
3. Use budget periods which coincide with sales and production cycles.	3. Don't fail to consider the favorable effect of capital expenditures on operating budgets. Stress the advisability of capital additions which will increase production, improve product or reduce operating costs.
4. Use these vital factors in forecasting sales: *a*) Past experience; *b*) Pricing policy; *c*) Production capacity and cost; *d*) General business conditions; *e*) Position in business cycle; *f*) Nature of competition; *g*) Consumer demand; *h*) Consumer purchasing power; *i*) Relate probable results from varying advertising appropriations; *j*) Sales Promotion Plans; *k*) Gross profit margins by product; operating profit and net profit.	4. Don't fail to recognize that certain departments operate at various stages of capacity.

DO	DON'T
5. Determine and record the reasons or statistics behind each forecast.	5. Don't compute all budget expenditures on the same basis. Usually there are three classifications as follows: *a*) Variable—(vary with volume); *b*) Semi-variable—(increase and decrease not usually in proportion to volume); *c*) Fixed—(rent, taxes, etc.).
6. Make certain that each executive clearly outlines the practical objectives that are expected to be accomplished in the budget period.	6. Don't forecast to the last detail. Concentrate on items of importance.
7. Anticipate trade, seasonal and economic changes in the establishment of expense budgets.	7. Don't resort to bromidic euphemisms. Be realistic and to the point. Slangy sayings sometimes rebound to your own embarrassment.
8. Point out prior and proposed forecast errors tactfully.	8. Don't be misled by executive optimism or pessimism in forecasting.
	9. Don't disregard ideas of others affected by the plan.

III. When Comparing Results, These Ideas Should Be Considered

1. Issue daily, weekly, monthly or other regular reports showing the conforming actuals with budget as well as explanations of principal variances.	1. Don't issue budget statements without comparisons to prior periods or without measurements of departmental efficiency.
2. Make certain that budget reports are issued on a timely schedule.	2. Don't present reports at such a late date that they are ineffective.
3. Make reports that are clear and concise: they will command greater executive respect and attention.	3. Don't accept variances without reasonable explanation.
4. Review results regularly with management, department heads, supervisors and others.	4. Don't forget that a budget is based on estimates.
5. Study budget and operating data carefully for recommendations, suggestions and future action.	5. Don't set controls too tight at first. Revise controls as experience is gained.
6. Consider the advisability of using functional charts and graphs for readable interpretations. Compare results of one division or department with another to develop a competitive spirit with respect to results.	6. Don't hesitate to recommend vigorous corrective action when necessary.
7. Present progress reports of capital expenditures with emphasis on cumulative costs, completion dates, and resulting economies or improvement of product.	
8. Check operating results and budgeting methods with contemporaries for new ideas and techniques.	

IV. These Observations Should Assist You in the Function of Controlling and Following Up the Results of Budgeting

A. *Control*

DO	DON'T
1. Remember that budgets and budget reports are essentially tools of management, not merely accounting reports.	1. Don't stop trying to improve results with new methods, procedures and ideas.
2. Observe, record and consider those daily incidents that are likely to develop into future variations.	2. Don't fail to establish definite objectives of performance within the budget.
3. Eliminate transfer of labor between departments except when absolutely necessary.	3. Don't overlook the objective viewpoint. Sit in the other fellow's chair when making recommendations: department head, banker, stockholder, executive, Board of Directors, etc.
4. Provide for possible curtailment because of unforeseen adverse changes in business conditions or prospects.	4. Don't fail to recognize that manufacturing or other difficulties are variable.
	5. Don't allow the budget to take the place of management and administration.

B. *Follow-Up*

1. Review corrective action with the department head respecting those daily incidents that are likely to result in budget variations.	1. Don't take credit for all the favorable results.
2. Regularly analyze transfers of direct to indirect labor and expense and vice versa.	2. Don't fail to stimulate the development of newer and better ways and means of obtaining results from department executives.
3. Reflect savings resulting from capital expenditures in the operating expense budget.	3. Don't forget that good budget performance does not occur as a matter of course but is brought about by constant surveillance.
4. Compare results with benefits anticipated before expenditure to see if technical or engineering faults may be remedied at little extra cost and thus fully realize the intended objectives.	4. Don't fail to forecast the effect of management's current decisions on future results.
5. Praise good performance.	5. Don't be content and conclude that your job is done after publication of the budget.

Chaptet 27

THE BUDGET MANUAL

Nature of Manual. A manual may be described as an orderly presentation of directives, or instructions, or facts concerning a given activity. It is, of course, applicable in those instances where a repetitive procedure is involved. To be sure, there are a considerable number of business firms, both large and small, which operate a rather successful budgetary program without the use of a budget manual as such. Instructions may be given orally or by letter. Moreover, even when budget manuals are used, there is a great range in content. Be that as it may, it is the experience of the authors that the gains resulting from the use of rather complete written instructions more than offset the time and effort required in their preparation. Certainly it would seem that if planning is beneficial to business generally, then the same might be said of the planned budgetary procedure itself.

Benefits of a Budget Manual. To a certain degree the benefit to be derived from procedures manuals generally are applicable to budget manuals. The more important advantages of making available a manual of budgetary procedure may be cited as follows:

1. Clearly defines authority and responsibility in budget matters.
2. Promotes standardization and simplification in that presumably the best method is selected.
3. Assists in coordinating and synchronizing effort.
4. Provides a convenient reference source when questions of procedure or responsibility arise.
5. Permits better supervision in that the time of supervisors is conserved to the extent that explanations are covered in the manual.
6. Assists in the training of new employees and in transfer of duties because many phases of the job have been reduced to writing.
7. Assists in "selling" the budget by explaining the advantages of the procedure.

Contents of the Budget Manual. A budget manual should be tailored to fit the needs of the specific organization in which it is to be used. It follows that the content may vary considerably. Moreover, in addition to the general budget manual there may be one for branches, distributors, agents, and dealers.

The contents of a typical budget manual are outlined as follows:

1. General statement of the objectives of the budget procedure.
2. Designation of central authority for the budget and responsibility for the preparation and enforcement of it.
3. Authority, duties, and responsibility of major and functional executives with reference to the budget procedure.
4. Instructions for divisional, departmental, and minor executives in the preparation, review, and revision of estimates.
5. Statement of length of periods for the various budgets.
6. Time schedule for budget preparation.
7. Interdepartmental budget relations.
8. Procedure for initial budget approval.
9. Procedure for budget revisions.
10. Budget reports.
11. Corrective action.
12. Special instructions for budget staff, with respect to human relations problems, administration, etc.

Preparing the Manual. To be of maximum value, a manual must be used by those for whom it is intended; and the budget manual is no exception to this general rule. Moreover, such use probably will be encouraged if it is prepared as a cooperative undertaking. While the primary responsibility for its origination will rest with the budget supervisor, and while a large part may relate to strictly accounting phases, yet the suggestions and comments of the operating departments should be secured, with particular reference to the operating responsibilities and procedure. For example, the views of the sales manager should be obtained with respect to the best channel or method for arriving at a realistic sales forecast or budget. A simple but effective procedure is as follows:

1. The budget supervisor should prepare a general outline of the manual.
2. The necessary research and review should be made in connection with the basic data.
3. Rough drafts of each procedure, etc., should be prepared by the budget department, perhaps with the assistance of the systems and procedures staff, if available.
4. These drafts should be circulated among those *directly* involved, so as to secure suggestions and viewpoints. (That is, the *sales* budget

procedure would be routed to the proper *sales* group, but need not be circulated among the research staff, and vice versa.)

5. Revised drafts should be prepared to incorporate as many suggestions as practical, and to reconcile any conflicting viewpoints.
6. Final drafts should be approved by the general executives, or division heads, as may be applicable.
7. A distribution list should be established.
8. The manual should be duplicated and distributed.
9. Provision should be made for periodic revisions.

A Practical Procedure. A particularly important section of the budget manual, and one which deserves special comment, is the one outlining the duties and responsibilities of those who participate in the budget program. Assuming that the executives, both major and minor, are "sold" on the budget as a useful management tool, then it is essential that each be able quickly to refer to an understandable source reference as to specifically what his part is in the plan. Therefore, this section of the manual needs careful analysis and preparation to be certain that responsibility is correctly placed. Moreover, it is desirable that a definite program be established covering every aspect of the budget procedure. Such a program should be described in considerable detail, usually outlining the who, what, how, and when of the operation.

Several methods or techniques may be used in preparing the responsibility and procedural phases of the manual. Essentially, the differences lies in the method of presentation. Of course, in a particular application, differences may exist as to the degree of detail included. Three suggestions are as follows:

1. Prepare a *summary* chart, showing by type of budget and by executive or department the responsibility of each.
2. Prepare a listing or chart for *each budget only* (i.e., sales budget, or production budget, etc.) indicating the procedure to be followed by each executive or department.
3. Prepare an outline by *individual area of responsibility* showing the various duties expected of that executive as to each budget.

An example of a summary chart is shown in Figure 95, although the descriptions are considerably abbreviated. Even though plans 2 or 3 mentioned above are used, this chart has the advantage of giving the entire picture instead of only a part. It permits each executive to secure an over-all picture of how various functions are coordinated. It can, therefore, serve as a summary, and be supported by other listings as to the more detailed phases of the plan.

THE JONES COMPANY
CHART OF BUDGET PROCEDURE
(Issue of November, 1955)

Executive or Department	Sales Budget	Production Budget	Material Budget	Labor Budget
A. Sales Manager	1. Prepares sales estimate for the budget period, broken down by product and territory, giving consideration to past experience, changes in sales policy, advertising program, competitive action, etc. 2. Submits tentative estimate to Budget Director for review by 1st day of third week preceding the budget period. 3. Receives approved sales budget from Director by or before 15th day preceding budget period. 4. Advises staff of sales requirement by 12th day preceding budget period. 5. Receives comparisons of budget and actual performance by 5th day of next period, and makes comments on variances to President, by 7th day.			
B. Production Manager		1. Receives approved sales budget in production units by or before 15th day preceding budget period. 2. Prepares and forwards to Budget Director, by 10th day before budget period, tentative estimate of production in units. 3. Receives approved production budget by 5th day preceding budget period and schedules production. 4. Receives comparisons of budget and actual production for period by 5th day of succeeding period, and comments on variances to President by 7th day.		
C. Research Director				
D. Budget Director	1. Receives sales estimate from A. 2. Reviews estimate and makes recommendations to Budget committee as to approval or revision by 18th day preceding budget period. 3. Transmits approved budget text.	1. Receives		

A simple chart which outlines the responsibilities of various executives with respect to a single budget—in this case the materials budget—is illustrated in Figure 96. This chart has the advantage of indicating on a single page the diverse duties regarding one budget. It may be useful as a cross reference tool.

Perhaps most executives prefer to have stated in one spot *all* of their duties regarding a given function. As presented in Figure 97, the general sales manager can review his entire responsibility as regards each phase of budgeting.

In any event, the budget procedure requires a great deal of coordination and cooperation. The budget manual can be of assistance in securing just that.

THE ILLUSTRATIVE COMPANY
CHART FOR PREPARATION OF THE MATERIALS BUDGET

Production Manager	1. Receives production program. 2. Prepares estimates of various materials needed to meet the production program, giving consideration to raw material inventory at beginning and end of period. 3. Transmits tentative materials budget to Budget Director for approval. 4. Receives and executes materials budget after approval by Budget Director. 5. Follows a similar procedure as regards revision of the materials budget. 6. Receives and takes corrective action, as required, on comparison of actual and budgeted performance.
Budget Director	1. Receives tentative materials budget from the Production Manager. 2. Presents tentative material budget to Budget Committee with recommendations as to revisions or approval, including supporting data. 3. Transmits approved budget to Production Manager. 4. Follows a similar procedure as regards revision of material budget. 5. Reviews comparative budget reports, makes recommendations, if necessary, and follows corrective action taken.
Budget Committee	1. Reviews materials budget as presented together with recommendations of Budget Director. 2. Approves materials budget, with any revisions deemed necessary. 3. Reviews actual and budgeted performance together with comments on corrective action, etc. 4. Approves necessary revisions in subsequent period.
Accounting Department	1. Renders any requested assistance to Production Manager in connection with original budget or revisions. 2. Prepares reports on comparison of actual and budgeted performance, including commitments. 3. Assists in making special analyses needed by Budget Director.

FIGURE 96. Chart for Preparation of the Materials Budget

THE GAS EQUIPMENT COMPANY
BUDGET MANUAL
DUTIES AND RESPONSIBILITIES—GENERAL SALES MANAGER

(Issue of November, 1955) Directive No. ____

Type of Budget	What	When	
		Annual	Monthly
SALES BUDGET	1. Provides product sales managers with sales history, and related data, and requests sales estimates in physical quantities by product line, and by territory from product sales managers.	3 months before budget period.	2 weeks before budget period.
	2. Also requests unit price data.	“	“
	3. Reviews sales estimates of product sales managers for reasonableness and unfavorable trends. Gives consideration to past sales experience, price policies, advertising and sales promotion policy, general business conditions, competitive situation, etc.	2 months before budget period.	6 business days before budget period.
	4. Submits tentative sales budget to Budget Director for approval.	6 weeks before budget period.	4 business days before budget period.
	5. Accepts approved sales budget and transmits to product sales managers.	2 weeks before budget period.	2 days before budget period.
	6. Receives comparison of actual and budgeted sales performance from Budget Director.		6th working day of next period.
	7. Explains reasons for variances and corrective action taken.		9th working day of next period.
ADVERTISING EXPENSE BUDGET	1. Requests advertising manager to prepare over-all estimate of advertising expenditures, including detailed projects.	3 mos. before budget period.	
	2. Receives proposal and reviews.	2 mos. before budget period.	
	3. Transmits tentative budget to Budget Director for approval.	6 weeks before budget period.	
	4. Receives approved advertising budget.	1 month before budget period.	
	5. Advises Advertising Manager of program.	“	
	6. Receives reports on budget and actual expenditures.		5th working day following period.
	7. Submits comments and corrective action statement on any significant departure from budget.		10th working day, etc.
	8. Requests budget revision.		As Needed

FIGURE 97. Budget Duties and Responsibilities—General Sales Manager

SELLING EXPENSE BUDGET	1. Provides department managers with history of cost experience, plans for next year, etc.	2 mos. before budget period.
	2. Requests selling expense budgets.	"
	3. Reviews subject budgets, checks reasonableness of expense, correlation with sales program, etc.	6 wks. before budget period.
	4. Passes expense budgets to Budget Director for approval.	6 wks. less 2 days before budget period.
	5. Receives approved budgets and advises department managers of results.	2 weeks before budget period.
	6. Receives comparison of departmental budget performance with actual.	15th day after end of month.
	7. Secures comments from managers and reports on variances.	20th day after end of month.
	8. Requests budget adjustments when applicable.	As Needed

FIGURE 97 *Continued.*

Chapter 28

EFFECTIVE BUDGET REPORTS

Securing a Saleable Report. The fundamental purpose of business budgeting is to find the most profitable course through which the efforts of the business may be directed and to hold the business to that course. In the larger and medium-sized companies, and to a considerable extent in the small firms, this purpose must be accomplished in part through the use of written reports. This means that the submission of mere tabulations or listings is not enough. The budget reports, which are the sales products of the budget program, must be sold. The facts must be understood and their significance realized by the management team.

This chapter deals with effective means of budget reporting. Methods of refining, highlighting, and interpreting the data are reviewed. It is in this field, which is really an aspect of human relations, that much remains to be done. Effective reporting is necessary for effective budgeting.

Essentials of Good Budget Reports. The preparation of effective budget reports requires adherence to the principles applicable to good managerial reports in general. These principles or rules may be briefly summarized as follows:

1. *Reports should be as clear and simple as possible.* They should be so designed and expressed that the reader will understand the essential facts with a minimum of effort. Technical accounting language should be avoided; and complicated statements should be omitted.
2. *Reports should contain only essential information.* All unnecessary data should be eliminated. For example, all unimportant figures should be combined into significant totals; and the facts should be confined to those within the scope or interest of the executive or supervisor who is expected to use them.
3. *Reports should be expressed in terms familiar to those who will use them.* For example, tons, man-hours, and per cent of operating down-time are more likely to be significant to some production executives than dollar cost of manufacturing.

4. *Reports should reveal trends and relationships.* Effective budget reports should not contain merely recitals of actual and budgeted costs. Rather, signals should be given as to what area requires corrective action. For example, it is one thing to report that warehouse labor cost is $1,000 for the month and quite another thing to show that it has risen steadily in relationship to physical volume of goods handled in the past six months.
5. *In general, the "exception" principle should be followed.* Normal operations need not be reported upon; but only out-of-the-ordinary phases should be shown. Of course, there will be instances, particularly in general reports, where *all* performance will be summarized.
6. *Information should be presented in logical sequence.* This merchandising principle should be followed in budget reporting. For example, when production people think in terms of the physical flow of the product, the report ought to be presented in the same sequence.
7. *Reports must be prompt.* A late report is almost as ineffective as no report at all. Therefore, the schedule of issuance should be determined with care and rigidly followed. In many situations, "flash" reports will be found preferable to waiting for the final and exact figures.
8. *The information contained in the reports should be accurate and dependable.* The repeated occurrence of errors causes a lack of confidence in the report as well as in the issuing department.
9. *The form of report should be suited to the executive who will receive it.* Whether a budget report will be graphical or statistical, and whether it will be accompanied by narrative, sometimes will depend largely on the desires and background of those who receive it. The content will be determined by the executive level to receive it. Also, the viewpoint of the recipient, not the accountant who prepares it, should be kept in mind.
10. *Wherever possible, reports should be standardized.* Others things being equal, it is preferable that all plants and divisions standardize on style, design, and size of report.
11. *Cost of preparation should be considered.* Many different methods of preparation and duplication are available. While effectiveness is paramount, economies in cost should not be overlooked.
12. *The degree of care in report preparation should be in relationship to its importance.* *All* reports must be accurate; but reports to be used for policy decisions, for example, require more checking than a routine daily labor report.

A word of caution is in order as to the tone of the report. It should be one of helpfulness and counsel rather than censure. There are occasions when stern criticism must be administered; but this is the task of management, and not of the budget director's staff. A great deal more will be accomplished, when weaknesses are pointed out, if every possible analysis is supplied which might assist in correcting the situation. For example, a branch sales manager may be told bluntly that his gross profit percentage is running at 31% as compared with a budget of 34%, and that something must be done. On the other hand, he might be tactfully informed that this apparent variance seems to be due largely to the work of salesmen A and B in neglecting lines X, Y, and Z. If the explanation and remedy of the branch sales manager are first solicited, he is far more likely to feel that the budget procedure can be a help rather than a pressure tool.

The Reporting Plan. The principles or fundamentals of preparing the *individual* budget report have been reviewed. While delving into the basic or broad rules of effective reporting, consideration should be given to the entire reporting plan. The report structure as a whole should be balanced against the needs of the organization. A review should be made to see that all areas are covered, that appropriate summaries and trend reports are being prepared, and that the detailed reports are in proportion to the magnitude of costs or income and the experienced degree of efficiency.

As an organization becomes budget conscious, there is a tendency to require more reports for the use of the supervisors. Coupled with this symptom is the ever changing characteristic of most businesses. It is easy to understand, therefore, how some reports can become outmoded and how other areas develop which need closer watching. These circumstances require periodic survey of the reporting plan. Furthermore, requests for additional budget reports can be the occasion for a review to ascertain just why the report is needed, how it will be used, and what other information is available.

Content of Budget Reports. As used throughout this chapter, budget reports relate primarily to the enforcement and actual performance phases as distinguished from the worksheets and related analyses used to establish the budget in the first instance.

The content of a budget report obviously will depend upon the need of the situation. The degree of acuteness of the problem, the type of activity, the personality of the recipient—all these factors, and more, will cause considerable latitude in the content. To generalize, however, effective budget reports (including graphs) should contain information of the following nature as applicable:

1. Comparison of actual and budgeted performance.
2. Comparison of actual and standard performance (where standard and budget are not identical).
3. Where the current budget differs from the annual forecast, a comparison with the original program.
4. Significant trends and relationships, including experience of prior periods or years.
5. Explanations of variances, their causes, effect on the program, and perhaps a statement of remedial action taken or to be taken.
6. Comparison of actual and budgeted performance with external data, such as industry activity.

Budget reports need not be restricted largely to dollar information. Unit data, whether man-hours, pounds, or tons, are helpful; percentage comparisons can be extremely useful. The objective is the presentation of facts which will be acted upon.

Frequency of Reports. The frequency with which budget reports should be issued naturally depends on the needs of the situation. If a problem is rather critical, reporting will be more frequent than otherwise. The level of responsibility also will be a factor. Thus, major executives are not too concerned with day to day fluctuations, and require monthly and yearly summaries. Executives in the lower echelon often will require daily, perhaps even hourly, and almost always, weekly reports. In general, the higher the level of responsibility, the less frequent need be the report.

Form of Reports. A primary consideration in selecting the form of budget reports is to adapt them to the preference of the executives who use them. This may require some experimentation on the part of the controller or budget director. Some executives desire far more statistical detail than others. Marketing executives, for example, are supposed to be somewhat more resistant to statistical detail than are engineering and production executives, although this distinction is gradually disappearing.

One peculiarity of budget reports is, however, applicable regardless of the executive and that is the need for extensive narrative comment. The budget data are of such a nature that much explanation of causes and interrelationships is required, and this can be presented best by narrative statement. It is one thing to prepare a statistical analysis, but something entirely different to state concisely the significant facts revealed by the information.

Graphs are useful in budget presentation, although they are employed most often in summary comparisons and relationships. This form of report is usually accompanied by extensive explanatory comment.

Illustrative forms for reports are shown in the various chapters dealing with specific subjects such as sales, manufacturing expenses, and selling expenses. Further examples are given in the following sections.

Reports for Major Executives. The interests of the major executives extend over the entire business. This is to be expected of the chief executive. But the other key executives, functioning as a team, also are concerned with the over-all picture. To be sure, each is interested in, and concerned to a greater extent with, his own field; but each looks beyond this. The production executive, of course, focuses his attention on production efficiency. He is also expected to be informed, for example, on the general sales picture, the new developments in research and the status of economic conditions. In a similar fashion, the purview of other major executives extends throughout the length and breadth of the industry in which they earn their livelihood.

For the major executives, then, budget reports should be in summary form, and deal with the broad phases of the business. One area of interest will be the operating results, which generally should be in comparative form. The statement of financial condition, likewise, may be more useful if comparison data are presented.

A graphic report showing over-all operating results and budget performance is contained in Figure 98. This operating profit control chart shows over or under runs of actual as compared to budget by responsibility. A somewhat similar chart may be prepared wherein only the variance is shown.

For each major division, it is preferable that the budget performance be summarized, as in Figure 99. Each responsibility area is, in turn, supported by budget reports showing the type and cause of the specific variance. Accompanying commentary by the controller or budget director could serve to highlight and interpret the results.

As previously mentioned, the major executives are interested in trends. Simple statistical tabulations are often useful. In other cases, trends are vividly shown in graphic form. A chart found popular with sales executives, which permits comparison of actual and budget for the current year and actual for the similar month of the preceding year is illustrated in Figure 27 on page 128. Similar charts may be used in expense applications.

A form of summary reporting which differentiates between the normal performance and sub-normal is that contained in Figure 100.

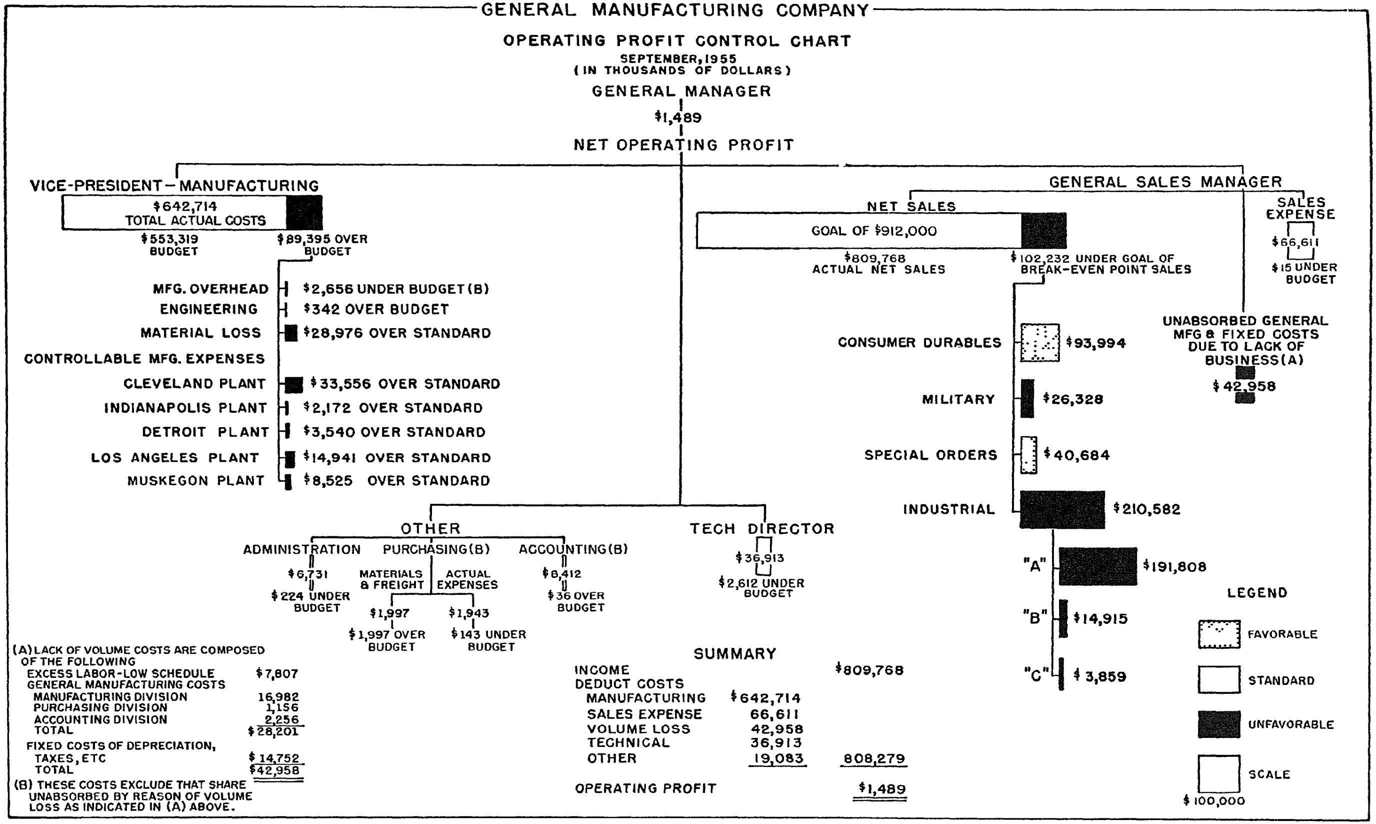

FIGURE 98. Operating Profit Control Chart

THE GAS HEATER COMPANY
BUDGET REPORT
SUMMARY

Month Ended February, 1956
Dept. Mfg. Division
Dept. Head R. A. Anders

Description	Current Month			Year to Date		
	Budget	Actual	(Over) Under	Budget	Actual	(Over) Under
PLANTS						
Los Angeles	$1,384,909	$1,396,433	$(11,524)	$2,684,639	$2,794,232	$(109,593)
Indianapolis	44,631	44,579	52	91,735	96,293	(4,558)
Cleveland	75,839	78,265	(2,426)	147,230	154,067	(6,837)
Detroit	1,322,699	1,336,196	(13,497)	2,613,955	2,644,565	(30,610)
New York	227,354	239,805	(12,451)	491,422	522,480	(31,058)
Subtotal	$3,055,432	$3,095,278	$(39,846)	$6,028,981	$6,211,637	$(182,656)
GENERAL MANUFACTURING OVERHEAD						
Works Administration	15,237	15,499	(262)	31,814	33,231	(1,417)
Product Engineering	8,030	7,363	667	22,069	20,967	1,102
Engineering—Central	5,515	4,689	826	10,703	9,709	994
Personnel—Central .	19,390	19,703	(313)	39,544	39,235	309
Purchasing—Central.	2,755	2,798	(43)	5,520	5,719	(199)
Stores	1,351	1,437	(86)	2,649	2,473	176
Traffic	1,166	1,103	63	2,367	2,161	206
Industrial Engineering	16,077	17,719	(1,642)	31,358	32,780	(1,422)
Boiler	5,327	5,494	(167)	11,007	11,404	(397)
Maintenance	28,158	31,422	(3,264)	54,681	61,458	(6,777)
Yard	2,683	2,742	(59)	5,744	5,297	447
Total Operations..	$3,161,121	$3,205,247	$(44,126)	$6,246,437	$6,436,071	$(189,634)
OTHER						
Material Price	3,695	-	3,695	26,278	-	26,278
Material Freight	79	-	79	2,489	-	2,489
Lost Hrs.—Mat'l. Shortages	(5,863)	-	(5,863)	(5,863)	-	(5,863)
Total Division Performance	$3,159,032	$3,205,247	$(46,215)	$6,269,341	$6,436,071	$(166,730)
PER CENT (OVER) UNDER BUDGET ..			(1.46%)			(2.66%)

Comments:

Comparative Data for Prior Years (To Date)

	Budget	(Over) Under Budget	
		Amount	%
1955	$6,300,000	$(197,310)	(3.13)
1954	6,900,000	(276,400)	(4.00)
1953	6,400,000	(288,200)	(4.50)
1952	7,200,000	(338,470)	(4.70)

FIGURE 99. Summary of Manufacturing Division Budget Performance

The illustrated reports in this chapter are suggestive only. Other alternatives or possibilities have been described in previous chapters. For each particular group of executives, experimentation with types and frequency must be undertaken by the budget director. The key words are *breadth of scope* and *simplicity* in highlighting important matters for the attention of the major executives.

SALES REPORT NO. 2

MONTHLY SUMMARY OF SALES

MONTH OF February, 19—

TOTAL SALES

Comparison of this month with previous years and budget
(Even 100 dollars)

1942	$200,700
1943	220,400
1944	180,200
1945	215,600
1946	220,500
Per cent Increase or (Decrease) over last year	2.3%
Five-year average	$207,500
Per cent Increase or (Decrease)	6.2%
Budget	$223,000
Per cent of budget	98.9%

DEPARTMENTS BELOW BUDGET

	Budget	Actual	Amount Below	Per Cent
Legal Blanks	$30,100	$29,100	$1,000	97
Tax Records	20,600	16,100	4,500	78

TERRITORIES BELOW BUDGET

	Budget	Actual	Amount Below	Per Cent
E. West Va.	$15,600	$15,000	$ 600	96
W. West Va.	20,500	19,500	1,000	95
N.E. Ohio	40,200	37,200	3,000	92

This report must be given to Mr. Murphy, Sales Manager, by 10:00 A.M. of the third working day of the following month. Report is filed in Binder No. 2.

FIGURE 100. Monthly Sales Summary Report for Sales Manager

Reports for Other Executives. The term "other executives" includes those who do not fall within the top echelon but range from department managers to plant foremen. Their responsibilities are more restricted and relate principally to the departments and cost centers over which they have control. Therefore, the budget reports must be more detailed and should, of course, compare budgeted and actual performance of the department. Moreover, many sub-analyses will be valuable in arriving at the answer to out-of-line conditions. Longer term trend reports are of some use, but the major emphasis usually is on the current control reports.

The past chapters have contained many illustrative reports for the operating group. An example of a daily labor report for a plant superintendent is shown on page 179. Figure 32 on page 179 illustrates a weekly labor report to a foreman. Such reports may be further analyzed if the supervisor is interested. Thus, a daily labor report could show actual and standard hours by *individual operation.* As another example of labor reports, the authors know of a paper company which issues a weekly labor report summarizing *hours* and *cost,* including actual, standard, and excess, by cost center and by occupation.

Reports in comparable detail are applicable to most phases of business activity. Examples are numerous, both in this volume and in many other publications. The designs or forms are countless, and depend on the needs of the situation and the ingenuity of the budget staff.

Personal Contact of Budget Executive. The preceding discussion has centered largely on written reports. However, on numerous occasions the controller or budget director will have an opportunity to present information orally. These are times when facts and figures may be put to good use—a time when the budget and accounting controls generally may be merchandised. Such chances should be welcomed. Several economical yet simple means of visual presentation are available to put facts and figures to work in a convincing manner.

Aside from times of report presentation, the matter of personal contact is important. The preparation of reports does not in itself complete the responsibility of the controller or budget executive. He must know his company, its policies and methods. Through continuous contact with the functional and divisional executives he must learn to see through the eyes of these executives. He must know their difficulties and be sympathetic with their problems. In some respects he is the contact man between central management and operating executives all down the line. He must not assume the role of chief executive but he should attempt to interpret the policies and program of the company as the chief executive would like them to be known and followed. Conversely, he is in a position to present to central management many of the problems of the men at the front. The controller who can intelligently represent management in developing and enforcing the company program and who is accepted by operating heads as a welcome counselor will reach an extremely high level of usefulness to his company.

Other Supplementary Data. The budget reporting is an important segment of the controls of a company. However, the usual budget data do not in themselves encompass all those areas of information which are in fact basic to the business plan itself. Therefore, consideration should be given to either the inclusion of such facts with certain budget reports or independent summarization. Illustrative of this type of data are the following:

1. Orders to be received, units or dollars or both.
2. Sales in units and average selling price where units are uniform.
3. Significant increases or decreases in sales volume (units or dollars) contemplated from adding new products, new territories, etc., or dropping old ones.
4. Percentage increase in sales prices (weighted average) from current level.
5. Major changes contemplated in methods of distribution.
6. Total distribution cost per sales dollar.
7. Total number of distribution employees, employee hours, average hourly wages, and average yearly income.
8. Production in units where some unit measurement can be applied.
9. Average percentage of capacity of plant operation for each month of budget period.
10. Significant changes in production costs classified as to material, labor, and burden.
11. Total number of production employees, labor hours, average hourly wages, and average yearly income.
12. Total number of administrative and office employees (excluding executives) and average yearly income by groups.
13. Total number of all employees.
14. Distribution of sales dollar to labor, materials, services, interest, taxes, dividends, and remaining profits.
15. Net earnings per share of stock.
16. Book value per share of stock.
17. Significant changes contemplated during the period in cash, receivables, inventories, investments, plant, current indebtedness, and fixed indebtedness.

Many of the items such as noted above should be set forth, showing the figures of the budget period as compared to the current period as presently estimated or to the corresponding period of the previous year.

Making the Budget Effective. The essentials of budgeting perhaps can be summarized in this manner:

1. Develop a *sound* business program.
2. Report on the progress in achieving that program.
3. Take necessary action as to all variances which are controllable.
4. Revise the program to meet the changing conditions as required.

To be sure, there are matters beyond the control of the business executives. But certainly the making of plans even though changes must be made, and the enforcement of that phase of the operations which is subject to control, is vastly superior to a situation in which no intelligent planning is attempted.

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